DOCUMENT RESUME

ED 424 522 CG 028 813

TITLE	Reducing Tobacco Use among Youth: Community-Based Approaches. A Guideline. Prevention Enhancement Protocols System (PEPS) Series.
INSTITUTION	Substance Abuse and Mental Health Services Administration (DHHS/PHS), Rockville, MD. Center for Substance Abuse Prevention.
SPONS AGENCY	Department of Health and Human Services, Washington, DC. Div. of Nursing.
REPORT NO	DHHS-SMA-97-3146
PUB DATE	1997-00-00
NOTE	181p.; For other volumes in the "Prevention Enhancement Protocols System" series, see CG 028 814-815 and CG 028 841-843.
CONTRACT	277-92-1011
AVAILABLE FROM	Center for Substance Abuse Prevention, National Clearinghouse for Alcohol and Drug Information, P.O. Box 2345, Rockville, MD 20847-2345; Tel: 800-729-6686 (Toll-Free); Tel: 301-468-2600; TDD: 800-487-4889; Web Site: http://www.health.org
PUB TYPE	Information Analyses (070)
EDRS PRICE	MF01/PC08 Plus Postage.
DESCRIPTORS	Community Problems; *Community Programs; Health Education; *Prevention; Program Development; Program Implementation; *Smoking; *Substance Abuse; *Tobacco; Youth Problems
IDENTIFIERS	Prevention Enhancement Protocols System

ABSTRACT

General guidance is offered in the planning and implementation of community-based strategies for the prevention of tobacco use among youth. Ideas and data are organized by means of the Prevention Enhancement Protocols System (PEPS), which is a systematic process for evaluating prevention research and practice evidence, assessing the strength of that evidence, and then developing recommendations for practice. Chapter topics are: (1) "The Problem of Tobacco Use among Youth," covering historical context, epidemiology, consequences, and risk and protective factors for tobacco use among youth; (2) "Community-Based Prevention," including a review of community issues, a rationale for programs, a sociological framework for tobacco control, and a review of programs; (3) "Analysis and Recommendations," which discusses the evaluation of prevention approaches, presents six major approaches, makes recommendations, and reviews research evidence and practice cases; (4) "Tobacco Prevention Intervention: Implementation Action Plan," which provides a conceptual framework for implementation, also covers issues about applications, cost, measurement, and other considerations. Appendixes are: "PEPS Participants," "Research and Practice Search Protocols," "Methodology for Arriving at Recommendations," "Collateral Research," "Abbreviations and Glossary," and "Resource Guide." (EMK)

Substance Abuse and Mental Health Services Administration
Center for Substance Abuse Prevention

Reducing Tobacco Use Among Youth: Community-Based Approaches

PEPS
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PEPS

A Guideline

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Prevention Enhancement Protocols System (PEPS)

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Substance Abuse and Mental Health Services Administration
Center for Substance Abuse Prevention

The Prevention Enhancement Protocols System (PEPS) Series was initiated to systematically evaluate both research and practice evidence on substance abuse prevention and then compile recommendations for the field. In doing so, PEPS strives to maximize the prevention efforts of State substance abuse prevention agencies, practitioners, and local communities.

Prakash L. Grover, Ph.D., M.P.H., is the Program Director of PEPS and the Executive Editor of the guideline series for the Center for Substance Abuse Prevention (CSAP). Mary Davis, Dr.P.H., served as the team leader of the staff. Richard Clayton, Ph.D., wrote Chapters 1 and 2, and Mim Landry crafted Chapter 3 out of deliberations of the subpanel of experts. Mary Davis and Jennie Heard wrote Chapter 4. The staff wrote chapters with substantial assistance from the Expert Panel. Chip Moore assumed primary responsibility for editing the document in its final stages. Donna Dean wrote the Practitioner's Guide and the Community Guide based on the evidence summarized in the main guideline. Substantial review was conducted by Robert W. Denniston, Mark Weber, Tom Vischi, and Lisa Gilmore. During development of this guideline, Sheila Harley, CSAP, served as the Government Project Officer of the Prevention Technical Assistance to States (PTATS) project under which this publication was produced.

This publication was prepared for the Substance Abuse and Mental Health Services Administration (SAMHSA), CSAP, by Birch & Davis Associates, Inc. (Contract No. 277-92-1011).

DHHS Publication No. (SMA)97-3146.

Prevention Enhancement Protocols System (PEPS)

REDUCING TOBACCO USE AMONG YOUTH: COMMUNITY-BASED APPROACHES

A Guideline

1st in a Series

Substance Abuse and Mental Health Services Administration
Center for Substance Abuse Prevention
Division of State and Community Systems Development

Acknowledgments

This is the first guideline in the series, Prevention Enhancement Protocols System (PEPS), sponsored by the Center for Substance Abuse Prevention (CSAP). Inasmuch as the quality of this work is predicated on the program that generated it, we wish to acknowledge not only the contributions of those who created this document, but also the extraordinary efforts of the people who helped develop the PEPS program.

When we conceptualized PEPS, no models of evidence-based guidelines for behavioral interventions existed. We, therefore, had to develop the concept, structure, and operations of the program, harvesting the expertise of agencies such as the Agency for Health Care Policy and Research, the Center for Substance Abuse Treatment, and others. However, once the basic program concept was formulated, the PEPS Planning Group (Appendix A) became more than an equal partner in its development. The leadership of Richard Clayton, as chair of the Planning Group, and Robin Room and Ralph Hingson, who graciously took on the leadership role as cochairs when needed, was indispensable, as were the contributions of Lois McBride, assisted by Suzanne Boland, of Birch & Davis Associates, Inc.

During the past 3 years, which were critical in testing our operational model, other Birch & Davis team members made valuable contributions as well. Mary Davis and Mim Landry contributed both to the PEPS program as well as the guidelines. Jennie Heard and, later, Chip Moore patiently edited the document through its many inevitable drafts and changing perspectives.

All through the challenging period of program development, the leadership and guidance of Gale Held were sagacious, supportive, and immensely useful. With the reorganization of the Substance Abuse and Mental Health Services Administration and the change in leadership at CSAP, the support of Ruth Sanchez-Way, the new Division of State and Community Systems Development Director, and Stephania O'Neill, Acting Director, CSAP, has been equally indispensable.

The Expert Panel (Appendix A) assumed major responsibility for refining the prospectus of this guideline and guiding the staff in its development. Tony Biglan, Richard Clayton, Renato Espinoza, Ellen Feighery, Marilyn Massey, and James Neal, as a subgroup of the Expert Panel, made sense of all the research and practice evidence and crafted recommendations and lessons for the field.

Several Federal departments and agencies participated through the Federal Resource Panel (Appendix A). CSAP acknowledges their contribution with gratitude. The special efforts of the Centers for Disease Control and Prevention, Office on Smoking and Health, and the Food and Drug Administration in reviewing the document are greatly appreciated.

CSAP also gratefully acknowledges the assistance of scores of professionals in the States' offices of substance abuse and tobacco control. Their reviews and comments should greatly enhance the potential utility of the guideline and its related documents.

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Preface

As part of an effort to strengthen the substance abuse prevention systems in the States and territories, the Center for Substance Abuse Prevention (CSAP) of the Substance Abuse and Mental Health Services Administration (SAMHSA) established the Prevention Enhancement Protocols System (PEPS) in 1992. It is a systematic process for evaluating prevention research and practice evidence, assessing the strength of that evidence, and then developing recommendations for practice. Prevention researchers, practitioners, State substance abuse decision- and policymakers, program planners, community practitioners, and concerned citizens can use this information to improve prevention programs, to consolidate and focus prevention interventions, and as a foundation for prevention studies. SAMHSA is pleased to present to the field *Reducing Tobacco Use Among Youth: Community-Based Approaches*, the first in a series of prevention guidelines planned by CSAP's Division of State and Community Systems Development.

The goals of PEPS include the following:

- Synthesizing research and practice evidence on selected topics
- Presenting recommendations for effective strategies in substance abuse prevention in a form suitable for various audiences
- Ensuring that PEPS products are optimally disseminated among target audiences
- Monitoring the use and relevance of PEPS products

Context of This Guideline

SAMHSA and CSAP selected the guideline topic for several reasons. First, tobacco use among youth has been repeatedly documented as a priority public health problem. Two recent reports have vividly documented the problem and the state of prevention research and tobacco use by youth. The Surgeon General's 1994 report, *Preventing Tobacco Use Among Young People*, focused on youth tobacco use prevention as a public health priority (U.S. Department of Health and Human Services 1994). It and the Institute of Medicine's 1994 report, *Growing Up Tobacco Free* (Institute of Medicine 1994), recommended policy steps to prevent tobacco use by youth based on the effectiveness of those approaches. Second, focusing on underage smokers and users of smokeless tobacco also supports one of the goals identified in *Healthy People 2000: National Health Promotion and Disease Prevention Objectives.*

Finally, and most importantly, this guideline responds to the needs of the States in meeting the Synar Amendment to the 1992 Alcohol, Drug Abuse, and Mental Health Administration Reorganization Act. While most States have had laws restricting access to tobacco by minors, the laws have been poorly enforced. The Synar Amendment requires all States to document good-faith efforts to inhibit access by youth to tobacco products and report on their results each year. It requires that all States have a law prohibiting any manufacturer, retailer, or distributor of tobacco products from selling or distributing such products to any individual under the age of 18. The Synar Amendment also requires States to conduct annual random, unannounced inspections of a valid sample of youth-accessible outlets to ensure compliance with the law. The regulation requires States to submit to the Substance Abuse and Mental Health Services Administration an annual report detailing the State's activities to enforce the law, and its success during the previous fiscal year in reducing tobacco availability to youth, describing how inspections were conducted and the methods used to target outlets, and plans for enforcing the law in the coming fiscal year.

The Synar Amendment is a substantial complement to the August 1996 publication of the final rule on tobacco in the *Federal Register* mandating that the Food and Drug Administration regulate the sale and distribution of cigarettes and smokeless tobacco to children and adolescents. The rule prohibits the sale of cigarettes and smokeless tobacco to those under 18 years while leaving them on the market for adults. It restricts access by children and adolescents in the following ways: retailers must verify that purchasers are 18 years or older by checking identification; vending machine sales and self-service displays are prohibited except where retailers ensure that minors are not present at any time; mail-order sale of tobacco products will be monitored by the FDA; the minimum cigarette package size is 20 cigarettes; and the distribution of free cigarettes or smokeless tobacco samples is prohibited. The rule also includes restrictions designed to reduce the appeal of advertising to children and adolescents. For example, outdoor tobacco advertising is prohibited within 1,000 feet of elementary and secondary schools and public playgrounds. Cigarette and smokeless tobacco advertising is limited to black text on a white background except for publications with a primary adult readership and in adult-only facilities. The tobacco industry is prohibited from disseminating any nontobacco item or service that identifies that item or service with tobacco products, such as tee shirts, caps, and sporting goods. Also, tobacco companies are prohibited from sponsoring events using a brand name or logo that associates the event with particular cigarettes or smokeless tobacco.

Both the Synar Amendment and the FDA rule buttress the efforts of the National Center for Chronic Disease Prevention and Health Promotion at the Centers for Disease Control and Prevention, which has been active in efforts to modify risk factors regarding tobacco, nutrition, and physical activity and to encourage compre-

hensive prevention approaches, including school health education, community health promotion, and prevention centers. Their Office on Smoking and Health serves as a focal point for cigarette smoking and health activities. These include surveys and analyses of tobacco use and its impact, national public information and education campaigns, and distribution of technical and public information materials to the research and public health communities and the general public. The National Center also funds States to develop school health programs that target tobacco use and supports such State-based disease prevention and health promotion programs as smoking reduction programs.

Other related Federal Government activities include the National Institute on Drug Abuse, which produces numerous publications in prevention and treatment research, epidemiology, behavioral research, and health services research. These publications report on advances in substance abuse, identify resources, and promote an exchange of information among researchers, policymakers, practitioners, and administrators. Many publications address substance abuse prevention in general and prevention of youth tobacco use in particular; these include the *NIDA Notes*, the *Clinical Report Series*, and *NIDA Research Monographs*.

Although the accumulated knowledge and practice in substance abuse prevention present special challenges for developing systematic evidence-based guidelines, PEPS has benefited from earlier efforts by Federal agencies and professional medical societies in developing guidelines for medical practice. In 1957, the Federal Commission on Chronic Illness initiated the first known medical practice guideline, which reviewed the characteristics of a beneficial screening program. Since then, a number of programs have been developed for medical prevention, diagnosis, and treatment, including the Canadian Task Force on the Periodic Health Examination, the Medical Practice Committee of the American College of Physicians, and the United States Preventive Services Task Force. The purpose of these programs was primarily to improve the practice of clinical preventive care through evaluation of the effectiveness of preventive practices and to provide recommendations to physicians on the most effective practices. The Canadian Task Force first proposed explicit criteria for evaluating preventive interventions based on the evaluation design of the interventions themselves (Hayward et al. 1991).

The Agency for Health Care Policy and Research (AHCPR) updated the work of these programs through its Guideline Development Program, initiated in 1989. This program produces clinical guidelines designed to help health care practitioners determine how diseases and other conditions can be most effectively prevented, diagnosed, treated, and managed (Depression Guideline Panel 1993). AHCPR's approach has demonstrated the value of explicit rules of evidence for assessing research findings and the importance of defensible strategies for synthesizing credible information. In 1996, AHCPR published *Smoking Cessation: A Guide for Primary Care*

Physicians as well as two companion documents: *Smoking Cessation: Information for Specialists* and *You Can Quit Smoking: Consumer Guide.*

The PEPS Process

In considering various programs for advancing the practice of substance abuse prevention, the advantages of a formal program to systematically assess available research and practice programs to provide recommendations to the field based on explicit criteria were clear. The PEPS Planning Group and staff developed the PEPS process for guideline development using the AHCPR documentation as a general model, with the following additions:

- Developing an explicit procedures manual and topic selection process
- Including vigorously sought practice evidence to determine the effectiveness of prevention activities
- Providing recommendations for research based on both the research and practice evidence
- Developing explicit recommendations for practice based on the quality of evidence and the knowledge of the expert panel members

As of 1996, the process has been applied to the present guideline and two others: *Environmental Approaches for Preventing Problems Related to Alcohol Availability* and *Family-Centered Approaches for Preventing Substance Abuse Among Children and Adolescents.*

The PEPS process, including the research and practice evidence search protocols and results, the rules of evidence for assessing the effectiveness of prevention strategies, and the SAMHSA/CSAP prevention framework, is explained in detail in the appendices. In brief, the development of a PEPS guideline generally follows these steps:

1. The Planning Group, which includes national experts in the field of substance abuse prevention, selects and defines a topic (from a list of topics recommended by the field) that meets explicitly stated criteria for development as a guideline.
2. A Federal Resource Panel, comprising representatives of agencies active in the prevention topic area, is convened to discuss the content of the guideline and to identify experts in the field who might serve on the Expert Panel. Expert Panel chairs and Panel members are also identified by staff and members of the Planning Group.
3. The Expert Panel meets to determine the scope and development of the guideline.
4. The staff search for relevant research and practice information, annotate their findings, and compile them by prevention approach for the Recommendations Subpanel of the Expert Panel.

5. A subpanel of the Expert Panel meets to apply the Rules of Evidence developed by the PEPS, arrive at summary judgments on the quality of the research and practice evidence by prevention approach, and provide recommendations to the field.
6. After the recommendations are written, staff prepare the full guideline for review by the Expert Panel.
7. The Expert Panel reviews the guideline, after which it is presented for review to the field.

This Guideline

Reducing Tobacco Use Among Youth: Community-Based Approaches is the first in a series of guidelines developed under the direction of CSAP's Division of State and Community System Development. Because of the wealth of information on this topic, a select number of approaches to the prevention of tobacco use were identified for this guideline. They include the following:

- Economic interventions
- Counteradvertising
- Interventions directed toward tobacco retailers
- Multicomponent community approaches
- Tobacco-free environment policies
- Advertising and promotion restrictions

At the time this publication is going to press, significant changes have occurred in the social context of tobacco use among youth. Substantial evidence has come to light regarding the addictive properties of nicotine, and the tobacco companies are negotiating with the Clinton administration on ways to both reduce the lure of tobacco and curtail tobacco advertising that is appealing to youth. However, in spite of this and similar efforts, the need for communities to be vigilant and to employ the best knowledge available to reduce and stop tobacco use among youth is vital. These developments underscore the utility of this guideline.

The most important aspect of PEPS is the use of systematic protocols to prepare guidelines such as this one. In the end, the overarching methodological accomplishments of PEPS may have far greater influence on the field than any single guideline, for they will have spawned the development and dissemination of new recommendations for the substance abuse prevention field that will serve to enhance ongoing activities.

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Using This Guideline

Reducing Tobacco Use Among Youth: Community-Based Approaches was conceptualized and written with its varied audiences in mind. State agencies, community-based organizations, and researchers in the field of tobacco use prevention may find this guideline useful for planning at the program and project level, allocating resources, choosing program options and approaches suitable for their target populations, or determining areas in the field for future investigation.

This guideline is intended to offer general guidance in the planning and implementation of community-based strategies for the prevention of tobacco use among youth. The information herein is presented at a level appropriate for those who already possess the necessary skills to implement the recommended actions or who have the ability to acquire these skills using extant resources in the field.

Chapter 1, The Problem of Tobacco Use Among Youth, discusses the historical context of tobacco use in the United States; the epidemiology of youth tobacco use, including incidence, prevalence, and high-risk populations; the consequences of tobacco use; and risk and protective factors for tobacco use among youth.

Chapter 2, Community-Based Prevention, explains why communities should be concerned about tobacco use in the community, especially use by adolescents, and discusses the changing sociological context of tobacco control, the rationale for emphasis on community-based projects, and single and multicomponent projects.

Chapter 3, Analysis and Recommendations, provides an understanding of what is known about the effectiveness of several community-based approaches to the prevention of tobacco use among adolescents, including economic interventions, counteradvertising, retailer-directed interventions, multicomponent community approaches, tobacco-free environment policies, and advertising and promotion restriction interventions.

Chapter 4, Tobacco Prevention Intervention: Implementation Action Plan, discusses the conceptual framework of the generic implementation action plan and presents the plan step by step.

The appendices provide additional information on the makeup of the groups overseeing the development of this guideline. Appendix A lists the names and affiliations of the PEPS Planning Group, the Federal Resource Panel, and the Tobacco Expert Panel; Appendix B outlines research and practice search protocols; Appendix C details the methodology used to arrive at recommendations and provides criteria for assessing the strength of available evidence for the effectiveness of substance abuse prevention interventions, measures, and programs; Appendix D provides information on evidence from collateral research, organized by approach. An acronym list and glossary are found in Appendix E. Specific information on implementing the approaches outlined here can be obtained by contacting the appropriate intervention planners listed in the Resource Guide provided in Appendix F.

1 The Problem of Tobacco Use Among Youth

Nicotine use begins at a very early age in the United States, even though it is illegal to sell tobacco products to minors and in some States the use of tobacco by youth is illegal (Ary and Biglan 1988; Collins et al. 1987; Conrad et al. 1992; Cummings et al. 1992; Hoppock and Houston 1990). National surveys indicate that nearly all smokers aged 35 years or younger began using cigarettes sometime in early adolescence, roughly between the ages of 11 and 15 years (Substance Abuse and Mental Health Services Administration 1996), and few people take up tobacco after the age of 18. Clearly, a key factor in reducing future numbers of tobacco users lies in our ability to stop adolescent experimentation with tobacco products.

Substantial numbers of youth are already dependent on nicotine by the time they are exposed to prevention efforts.

These surveys regarding the early onset of nicotine use suggest that substance abuse prevention programs that target adolescents are insufficient in number, inconsistent, and of inadequate duration. Furthermore, while school-based intervention is an important component of an overall prevention strategy, it is insufficient when used alone. Although most youth have received consistent and credible messages about the dangers of cigarette smoking, evidently these prevention and education efforts have not been sufficiently strong to prevent experimentation with tobacco products at young ages.

Such data also highlight an important difficulty that communities must confront as they attempt to reduce tobacco use among youth: substantial percentages of these youth are already dependent on nicotine from cigarettes, smokeless tobacco, or both (Slade 1993). Conventional primary prevention (e.g., "Don't ever start.") or conventional secondary prevention (psychology-based approaches to encourage people to stop) may not be sufficiently strong or comprehensive to break nicotine dependence (Reardon et al. 1989).

Effective prevention approaches must be based on a clear understanding of the epidemiology of tobacco use among youth as well as patterns and trends of use. Community-based approaches for preventing tobacco use among youth must be powerful, must cover *all* forms of tobacco use, and must consider the possibility and even likelihood of concurrent use (Altman et al. 1992; Bal et al. 1990; Choi et al. 1991; Erickson et al. 1990; Feighery et al. 1991; Flynn et al. 1992; Pentz et al. 1989a, 1989b, 1989c; Perry et al. 1992). To provide a meaningful context for such efforts, this chapter reviews the history of tobacco use and norms in the United States and presents data on the epidemiology of, risk and protective factors for, and short- and long-term health consequences of tobacco use among youth in the United States.

Historical Context

Tobacco use in America has roots older than the nation's founding. It became well established in colonial America but involved only a small segment of the population, whose use was limited to pipe smoking and dry snuff. In the early 1800s, however, tobacco chewing and cigar smoking became more common. Cigarette smoking did not become popular and widespread until after the Civil War, after the invention of machines to produce cigarettes in mass quantities.

Increased sales and consumption of cigarettes created a social and regulatory backlash. Since smoking was perceived as a dirty habit, by the end of the 19th century cigarette sales to minors were banned in all States. Fourteen States banned all sales of cigarettes, even to adults.

During World War I, cigarette smoking became common among U.S. soldiers and was soon identified in the public mind as part of the war effort. Indeed, in the summer of 1918, General H. L. Rogers added tobacco to soldiers' rations (Risch 1989). Effective lobbying by the tobacco industry promoted the social acceptability of cigarette smoking, even among women, and resulted in repeal of much of the regulation of the tobacco market (Austin 1978; Henningfield 1985). By 1930, in the midst of the Great Depression, all strict prohibition laws had been repealed. Even laws against tobacco sales to minors began to soften, and enforcement became virtually nonexistent (Austin 1978).

From the 1930s through the 1950s, smoking became not only acceptable but even desirable to large segments of the population. This phenomenon can be explained in part by the seemingly universal practice of smoking among U.S. troops during World War II, a practice that may have been encouraged by the inclusion of "nine 'good commercial quality' cigarettes" in the accessory packet of the troops' daily C ration (Koehler 1958). American cigarettes came to be identified as the best in the world. Cigarette smoking became a symbol not only of American industrial superiority but of success, sexuality, and the American way of life as well. Smoking was glamorized in movies and magazines and later, on television. The tobacco industry became one of the largest advertisers, promoting the image of smoking as a sophisticated practice associated with youth, good looks, health, and success (Ray and Ksir 1987).

In the 1950s, concerns about the health risks of smoking began to surface as research increasingly demonstrated links between smoking and various illnesses and diseases. This evidence was the primary basis for the landmark 1964 Surgeon General's report on smoking and health (U.S. Department of Health and Human Services 1964), which was the catalyst for major changes in how society attempted to control tobacco products. The report inspired dissension between antitobacco activists and the tobacco industry. Almost immediately, the Federal Trade Commission (FTC) proposed requiring health warnings on cigarette packages indicating that cigarette smoking "is dangerous to health and may cause death from cancer and other diseases." On the other hand, in 1965, Congress passed the Federal Cigarette Labeling and Advertising Act, which required a weaker warning and prevented the FTC and the States from regulating tobacco advertising in any other way (Action on Smoking and Health 1994). In 1966, John F. Banzhaf III, an attorney in Washington, DC, filed a complaint with the Federal Communications Commission (FCC) demanding free time under the Fairness Doctrine for counteradvertising against cigarette use. The FCC determined that the Fairness Doctrine (Box 1-1) applied to cigarette commercials, requiring broadcasters to provide free broadcast time for antismoking messages (Action on Smoking and Health 1994). This ruling was upheld in the U.S. Court of Appeals in 1968 and by the U.S. Supreme Court in 1969.

BOX 1-1: The Fairness Doctrine and the Equal Time Rule

The Fairness Doctrine directed any broadcast station presenting one viewpoint on a controversial public issue to afford reasonable opportunity for the presentation of opposing viewpoints. It is distinct from the Equal Time Rule, mandated by the Communications Act of 1934, which reads: "[i]f any licensee shall permit any person who is a legally qualified candidate for any public office to use a broadcasting station, he shall afford equal opportunities to all such candidates for that office."

Although clearly different, both policies originate from recognition of the airwaves as a scarce public resource, and they are usually presented as if they were the same.

In 1987, the FCC ceased enforcement of the doctrine. Subsequent efforts by Congress to revive it have failed (Cronauer 1994).

From 1967 to 1970, voluntary health agencies were able to wage a counteradvertising campaign against cigarette smoking, but initially were given only a third of the air time allotted to cigarette advertising, and nonprime time at that (Slade 1992). In 1969, the FCC ruled that radio and television stations must present a good portion of counteradvertising during prime time. Application of the Fairness Doctrine to broadcast cigarette advertising marked the beginning of a significant decline in cigarette consumption, which was attributed to the antismoking messages. To halt this decline, the tobacco industry successfully lobbied Congress to ban all broadcast cigarette advertising, effectively nullifying the requirement for free counteradvertising (Slade 1992).

In 1970, Congress required that all cigarette packages carry the following specific warning: "The Surgeon General Has Determined That Cigarette Smoking Is Dangerous to Your Health." In 1972, an FTC consent order required that all print advertising carry the same health warnings that appeared on cigarette packaging (U.S. Department of Health and Human Services 1994).

To counter the adverse publicity generated by the health warnings, the tobacco industry launched a three-pronged campaign: the establishment of the Tobacco Institute in the mid-1950s, industry-supported research on the health effects associated with smoking, and the production and marketing of products "designed to appear safe" (Slade 1992). So-called "safe" products have included filter-tipped cigarettes, shown during the 1960s not to be safe; low-tar brands, whose low-nicotine delivery can be circumvented by smoking more or inhaling more deeply; and smokeless cigarettes, whose potential harm thus far is as great as or greater than that of regular cigarettes (Slade 1992). The American Medical Association and the Coalition on Smoking OR Health asked the Food and Drug Administration (FDA) to regulate Premier, the first of the smokeless cigarettes, as a drug delivery device. Premier was withdrawn from the market in 1989 (Slade 1992). In 1996, R.J. Reynolds introduced a new smokeless cigarette, Eclipse. It contains a carbon tip that heats but does not burn tobacco and does not produce smoke or ash. Designed to reduce side-stream and second-hand smoke, it was in a final test marketing phase during 1996.

In the 1980s and early 1990s, numerous government agencies imposed a variety of restrictions on smoking. Designated smoking and nonsmoking areas emerged in public transportation and certain other public facilities. As concern about environmental tobacco smoke has grown, smoking has been banned in public buildings, transportation, and workplaces through employer initiative or Federal, State, and local ordinances. In the 1980s, regulations on advertising and warning labels were further tightened. In 1984, the Comprehensive Smoking Education Act (Public Law 98-474) replaced the Surgeon General's health warning on cigarette packages and advertisements with a new set of four rotating health warnings. The 1986 Surgeon General's report dealt with the health dangers of passive or secondhand smoke. In

the same year, the Surgeon General endorsed a report on the dangers and addictive potential of smokeless tobacco. Shortly after that, the Comprehensive Smokeless Tobacco Health Education Act (Public Law 99-252) required the rotation of three health warnings on smokeless tobacco packages and advertisements, prohibited advertising of smokeless tobacco on television and radio, and required a public information campaign on the health hazards of using smokeless tobacco (U.S. Department of Health and Human Services 1994; Warner et al. 1992; Wasserman et al. 1991).

In 1988, the Surgeon General's Report officially designated nicotine as an addictive drug in the same class as alcohol, marijuana, cocaine, and heroin. In 1989, Congress banned smoking on all domestic airplane flights in the United States. By 1990, virtually all States and hundreds of localities had placed restrictions on smoking (Akers 1992; Warner 1986, 1989; Warner and Murt 1983).

While most States have had laws restricting access to tobacco by minors, the laws have been poorly enforced. The Synar Amendment to the 1992 Alcohol, Drug Abuse, and Mental Health Administration Reorganization Act provided the needed incentive for States to enforce the laws. It requires all States to document good-faith efforts to inhibit access by youth to tobacco products and report on their results each year. It requires that all States must have a law prohibiting any manufacturer, retailer, or distributor of tobacco products from selling or distributing such products to any individual under the age of 18. It requires States to conduct annual random, unannounced inspections of a random sample of outlets accessible to youth to ensure compliance with the law. The regulation requires States to submit to the Substance Abuse and Mental Health Services Administration an annual report detailing each State's efforts to enforce the law and its success in reducing successful tobacco purchases made by youth, describing how inspections were conducted and the methods used to target outlets, and plans for enforcing the law in the coming fiscal year. By 1994, 43 States had enacted laws prohibiting tobacco sales to minors; by 1995, all States had such a law on the books. In 1993, the Environmental Protection Agency officially labeled secondary smoke as a group-A carcinogen that kills an estimated 3,000 Americans each year (Action on Smoking and Health 1994).

However, because tobacco is a heavily advertised and promoted legal product that is easily accessible to youth, prevention of its use by children and adolescents remains a public health priority. This concern is reflected in the 1994 Surgeon General's Report, which focused on tobacco use among youth, and in the Institute of Medicine's release of the document *Growing Up Tobacco Free: Preventing Nicotine Addiction in Children and Youth* (Institute of Medicine 1994). The Goals 2000: Pro-Children Act of 1994 (P.L. 103-227) established a nonsmoking policy at sites housing such children's services as health care, day care, education, or library services.

Epidemiology of Youth Tobacco Use

A number of studies in the United States have tracked the use of tobacco products and attitudes toward their use among youth. The two most often cited are the Monitoring the Future (MTF) study and the National Household Survey on Drug Abuse (NHSDA). These two studies serve as the foundation for the following discussion of the epidemiology of tobacco use among youth.

Monitoring the Future

The MTF study, which has been conducted annually since 1975, is a stratified, random probability sample (approximately 17,000 annually) of high school seniors attending public and private schools in the continental United States. In 1991, the study was expanded to include 8th and 10th grade students from independent samples of schools. The total sample size for the MTF study is now close to 50,000 a year.

National Household Survey on Drug Abuse

The NHSDA was conducted periodically from 1974 to 1990 and since then has been conducted annually. Unlike the MTF study, in which information is gathered via questionnaires from students in sampled schools, the NHSDA is a stratified, random probability sample of persons 12 to 17 years old in households in the entire United States. Another difference is that youth in the NHSDA are interviewed personally, whereas students in the MTF study complete anonymous questionnaires.

The following discussion presents data on the incidence (new users and age at onset) and prevalence (changes in the percentage of persons who are using tobacco to various degrees) of tobacco use, as well as on high-risk populations or groups (characteristics that differentiate between those who will and those who will not use or become heavy users of tobacco).

Incidence

In epidemiologic studies of drug use, incidence refers to age at first use of the drug under study (Centers for Disease Control and Prevention 1991a). Perhaps the best data on incidence come from the NHSDA, which contains representative samples of persons 12 through 17, 18 through 25, 26 through 34, and 35 years and older. (Determining the age of smoking initiation for preadolescents, although important, is problematic, as most surveys do not include persons under the age of 12 years.) All persons who report ever having used cigarettes are asked their age at first use. Table 1-1 shows findings of the 1994 NHSDA by age group on the average age at first cigarette use.

TABLE 1-1: Average Age in Years at First Cigarette Use, by Age Group, 1994

Age group	Age at first use
12-17	12.2
18-25	14.3
26-34	15.0
≥35	16.4

SOURCE: Substance Abuse and Mental Health Services Administration 1996.

The average age at first cigarette use has not changed much across all of the birth cohorts included in the NHSDA; it is in early adolescence.

Table 1-2 presents NHSDA data showing that for people in every age group, nicotine is clearly the first drug used and that its use begins even earlier than does use of alcoholic beverages (Bailey 1992; Breslau et al. 1993; Centers for Disease Control and Prevention 1992b; Fleming et al. 1989; Henningfield et al. 1990).

The fact that youths smoke does not necessarily mean that they violate State laws relating to the purchase of cigarettes. Some youths ask for cigarettes from friends or obtain them from parents. Of those who do purchase cigarettes, in only a few States are they violating the law, because most State laws restrict *sales to* minors but not *purchases by* minors. In one study (Forster et al. 1992), 77 percent of adolescents who smoked weekly reported that they had given tobacco to another minor, and even people who smoked weekly reported that family and friends are an important source of tobacco products for them. (Chapter 3 presents a more detailed discussion of youth access to tobacco.) Most States prohibit tobacco sales to minors, 29 States prohibit youth purchase, 18 prohibit youth possession, 12 prohibit youth use of tobacco, and 37 have one or more of these provisions.

TABLE 1-2: Average Age at First Use of Cigarettes, Alcohol, and Illicit Drugs, by Age Group, 1994

	Age group (years)					
Drug	12–17	18–25	26–34	≥35	All ages	Total Unweighted (*N*)
Cigarettes	12.2	14.3	15.0	16.4	15.6	(11,602)
Alcohol	12.8	15.6	16.3	18.4	17.3	(13,281)
Marijuana/ hashish	14.1	16.1	16.3	21.2	18.5	(6,187)
Inhalants	12.9	16.1	16.8	20.4	17.3	(1,211)
Cocaine	14.4	17.7	19.8	24.5	21.5	(2,222)
Hallucinogens	14.6	17.4	18.2	20.0	18.6	(1,699)
Heroin	13.4	17.3	21.6	21.7	20.9	(224)

SOURCE: Substance Abuse and Mental Health Services Administration 1996.

Prevalence

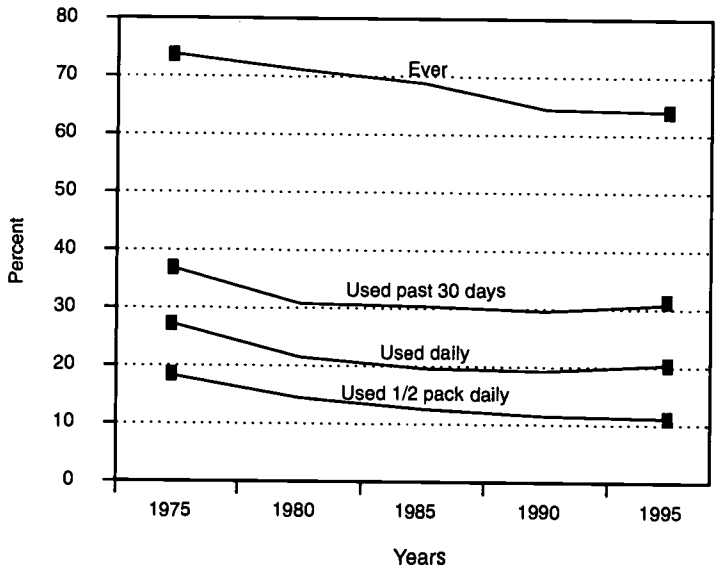
In epidemiologic substance abuse studies, *prevalence* is defined as the number of users at a given time. Prevalence is usually reported for lifetime, past year, and past month or current use.

Although experimentation with cigarettes is not universal, it is statistically and developmentally normative—that is, it is seen in greater than 50 percent of adolescent populations surveyed (Centers for Disease Control and Prevention 1992a; Escobedo et al. 1993; Johnston 1991; Thomas and Larsen 1993). The MTF data (Figure 1-1) show that among high school seniors the highest lifetime prevalence (75.8 percent) was seen in 1977, whereas the lowest rate (61.8 percent) occurred in 1992. Any experience with cigarettes has dropped about 12 percentage points among high school seniors over the past 15 years (NIDA 1996). The highest lifetime rate (78.1 percent)

in the NHSDA for 12- to 17-year-olds was seen in 1979 and the lowest rate (61.4 percent) in 1990, a reduction of 16.7 percentage points.

There are notable racial differences in the use of tobacco by high school students (Centers for Disease Control and Prevention 1991b, 1996a, 1996b). White students in grades 9 through 12 report the highest use, followed closely by Hispanics. However, rates for use of any tobacco and use of cigarettes by black students are far lower than these rates. In 1995, 38.3 percent of white and 34 percent of Hispanic high school students reported ever having used cigarettes while for blacks this percentage was only 19.2 percent (Centers for Disease Control and Prevention 1996a).

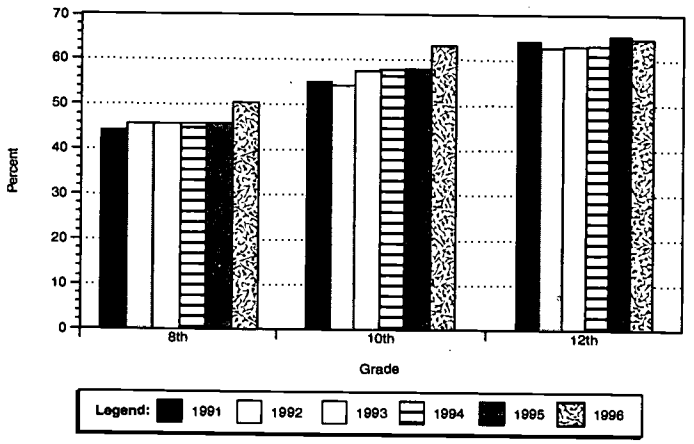
FIGURE 1-1: Rates of Cigarette Use Among High School Seniors



NOTE: Data are from the Monitoring the Future survey.

Several conclusions can be drawn from these data. Lifetime experience with cigarettes declined steadily between 1975 and 1990, but recent data indicate that this trend may be reversing (Institute of Medicine 1994; Johnston et al. 1994; Pierce et al. 1989). Furthermore, 6 out of 10 high school seniors and youth aged 12 to 17 years have tried cigarettes. Nearly half of 8th graders and slightly more than half of 10th graders have used cigarettes. In fact, the MTF study showed a 6.1 percent increase in lifetime experience with cigarettes among 10th graders between 1991 and 1996 (Figure 1-2) (NIDA 1996).

FIGURE 1-2: Cigarettes, Any Use by Grade, 1991-1996



Recent Changes in Cigarette Use

The MTF study provides a window on cigarette use by youth that reveals patterns that are more dangerous than experimentation. There were statistically significant increases between 1991 and 1996 in any use of cigarettes and in daily use of cigarettes among 8th, 10th, and 12th graders in the preceding 30 days (Figures 1-3 and 1-4). Equally notable, if not more so, is the fact that 22.2 percent of 12th graders,

18.8 percent of 10th graders, and 10.4 percent of 8th graders reported having used cigarettes daily during the 30 days before they completed the MTF questionnaire in 1996 (NIDA 1996). In addition, there was a statistically significant increase between 1991 and 1996 in the percentage of 8th, 10th, and 12th graders who smoked one-half pack or more daily. Thirteen percent of the high school seniors smoked one-half pack or more a day in 1996 (Figure 1-5) (NIDA 1996).

To put these data into historical and comparative perspective, consider that in 1979 there was a wide public outcry when it was reported that 10.9 percent of high school seniors were smoking marijuana daily (Clayton and Walden 1994; Johnston 1991). In 1993, 10.9 percent of high school seniors—the same percentage who had been using marijuana in 1979—reported using one-half pack or more of cigarettes daily. In 1996, 13 percent of high school seniors reported using one-half pack or more daily (NIDA 1996). Yet, despite the fact that cigarettes contain a drug known to be addictive (Benowitz 1992; U.S. Department of Health and Human Services 1988), have negative health effects, and are the largest preventable cause of death in the United States, the public outcry calling for the prevention of tobacco use among youth has been minimal.

FIGURE 1-3: Cigarettes, Any Use Past 30 Days, by Grade, 1991-1996

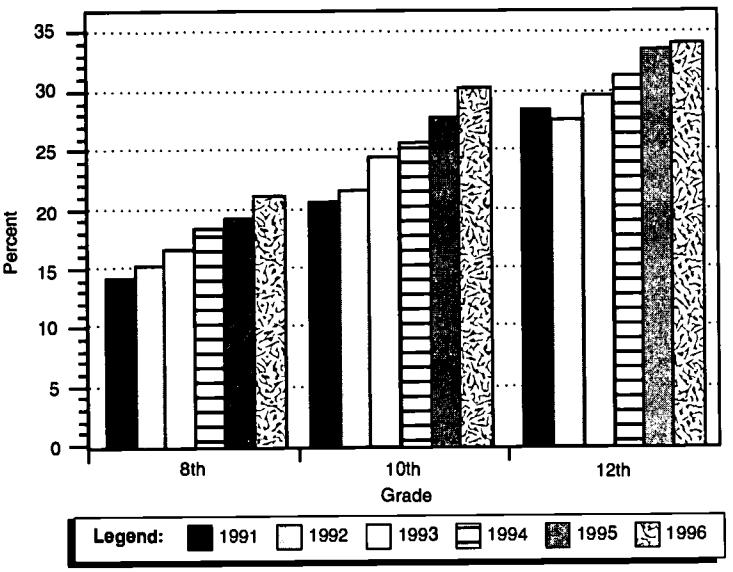
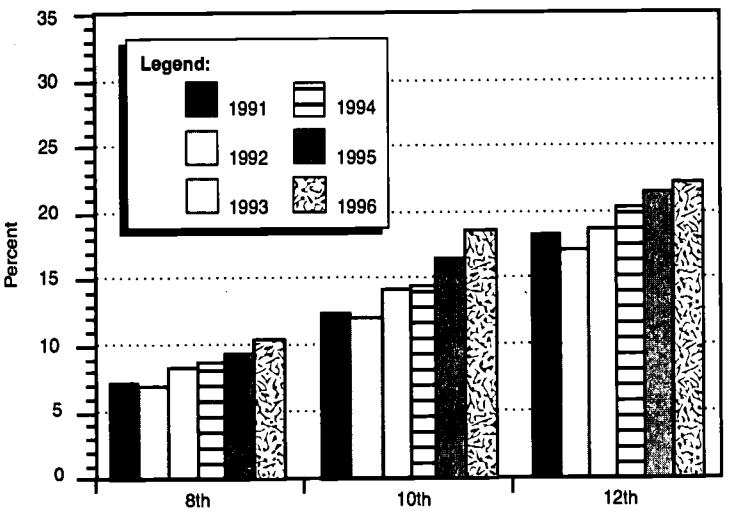


FIGURE 1-4: Cigarettes, Daily Use Past 30 Days, by Grade, 1991-1996



Prevalence of Use of Smokeless Tobacco

The principal epidemiologic studies of drug use among youth have only recently included smokeless tobacco in their purview. In fact, the 12th grade version of the MTF questionnaires did not include questions about smokeless tobacco until 1992. The responses to those questions revealed that a substantial percentage of youth have tried smokeless tobacco at some point (see Figure 1-6) (NIDA 1996). In fact,

FIGURE 1-5: Frequent Use of Cigarettes (1/2 pack or more per day), by Grade, 1991-1996

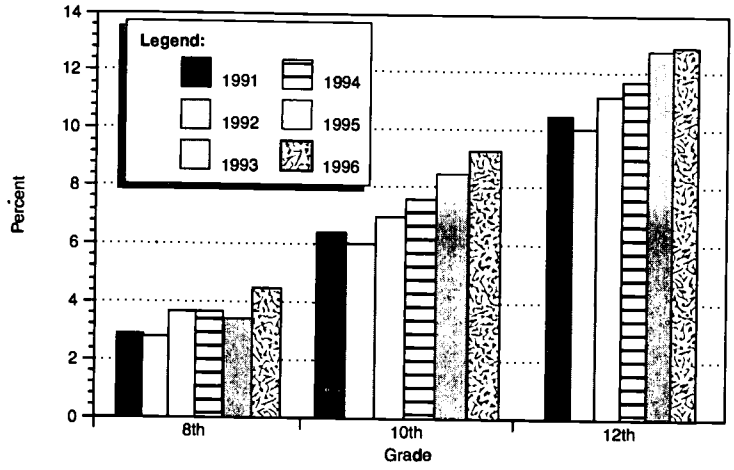
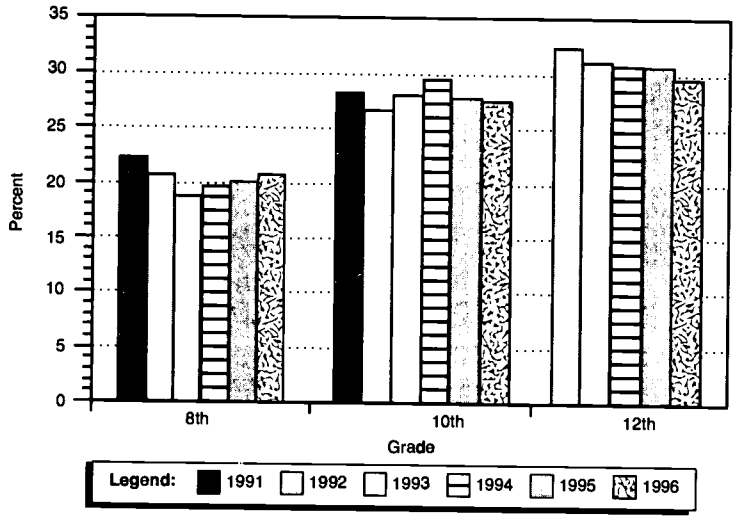


FIGURE 1-6: Smokeless Tobacco, Any Use



NOTE: 1991 data for smokeless tobacco are unavailable for 12th graders.

more than 1 in 10 high school seniors, nearly all of them male, report having used smokeless tobacco within the past 30 days (Figures 1-7 and 1-8) (NIDA 1996; Ary et al. 1987; Botvin et al. 1989; Boyd and Glover 1989; Dent et al. 1987).

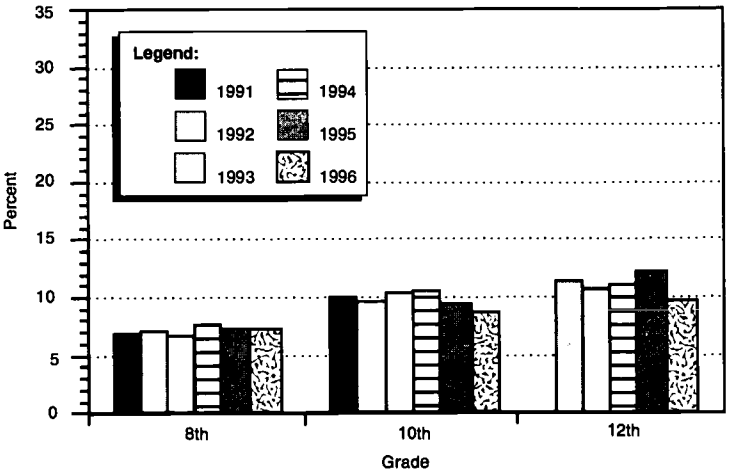
Concomitant Use of Cigarettes and Smokeless Tobacco

The prevalence for use of cigarettes and that for smokeless tobacco are almost always presented separately. However, some youth engage in both forms of tobacco use. This is particularly true for boys, who may use smokeless tobacco in same-sex social situations but cigarettes when they are with the opposite sex. Males may also use smokeless tobacco during the school sports season because they believe it will not affect their aerobic endurance and during school hours because detection is less likely. The Centers for Disease Control and Prevention examined the concomitant use of these two forms of tobacco, using combined data from the MTF senior classes of 1985 through 1989. They found that 15.6 percent of seniors who did not smoke (i.e., those who had not smoked any cigarettes in the preceding month) and 32.5 percent of those who currently smoke reported having used smokeless tobacco within the past month. Nearly half of high school seniors in the 1985 through 1989 classes were current users of tobacco (Centers for Disease Control and Prevention 1991b).

Table 1-3 shows data from a survey conducted in a rural Kentucky county in 1994 as part of an evaluation of a Center for Substance Abuse Prevention Community Partnership grant (Clayton and Walden 1994). Examining concurrent use of cigarettes and smokeless tobacco during the preceding 30 days has a dramatic effect on one's understanding of the epidemiology of tobacco use among youth. In this rural county, more than one-fourth (28.6 percent) of 7th grade boys and 40 to 50 percent of all boys in each grade from 8 through 12 had used some form of tobacco in the preceding 30 days.

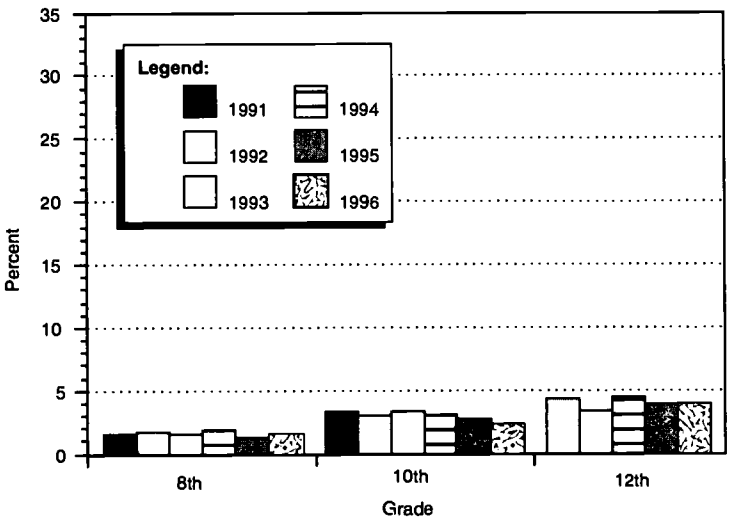
In each grade except the 11th in the Kentucky study, the percentage of boys who reported concurrent use of both cigarettes and smokeless tobacco was larger than that of boys who reported using only cigarettes. This may reflect the fact that these students live in a rural county where tobacco is the major crop or merely that they are from a rural area, where use of smokeless tobacco tends to be higher than in nonrural areas. An equally plausible hypothesis is that boys are as likely or more likely to use smokeless tobacco as they are to smoke cigarettes. If this is the case, community-based approaches must pay close attention to the use of smokeless tobacco among boys. The past-month prevalence rates for girls, regardless of grade, are based almost entirely on cigarette use, and these rates are also high.

FIGURE 1-7: Smokeless Tobacco, Any Use, Past 30 Days



NOTE: 1991 data for smokeless tobacco are unavailable for 12th graders.

FIGURE 1-8: Smokeless Tobacco, Daily Use Past 30 Days



NOTE: 1991 data for smokeless tobacco are unavailable for 12th graders.

Consequences of Tobacco Use

Because most of the research on the consequences of tobacco use has focused on adults who have used cigarettes for many years, attention to the consequences of tobacco use by youth is a relatively new phenomenon. Some of the most likely consequences of tobacco use among youth are the risk of nicotine addiction, short-term health risks, a greater risk for use of alcohol or illicit drugs, and a tendency to engage in health risk behaviors.

Risk of Nicotine Addiction

One major consequence of cigarette and smokeless tobacco use by youth is the development of physical and psychological dependence on nicotine. The 1988 Surgeon General's Report, *The Health Consequences of Smoking: Nicotine Addiction*, lists the following key criteria for determining addiction to a substance:

- Compulsive use, often despite knowing the substance is harmful
- Psychoactive effect (i.e., direct chemical effect in the brain)

- Reinforcing behavior that conditions continued use
- Withdrawal symptoms

Three out of four adults who smoke say that they are addicted, and by some estimates as many as 74 to 90 percent of smokers are addicted (Kessler 1994). In the 1994 NHSDA, the following symptoms of dependence were reported by 12- to 17-year-olds who had smoked cigarettes in the past year:

- 57.5 percent wanted to cut down
- 28.2 percent had used more than intended
- 30.5 percent reported that tolerance had developed
- 12.8 percent reported that cigarettes had caused problems at home or work

Sixty-seven percent of those interviewed reported at least one of the above problems.

TABLE 1-3: Percentage of Youth Reporting Tobacco Use During the Past Month, by School Grade and Sex, Madison County, Kentucky, 1994

	Percent using tobacco as:			
Grade and sex	Cigarettes only	Snuff only	Cigarettes and snuff	Any tobacco use
Grade 6:				
Boys	3.7	5.9	7.8	17.4
Girls	3.2	0.0	0.3	4.5
Grade 7:				
Boys	10.7	6.9	11.0	28.6
Girls	15.0	0.9	1.3	17.2
Grade 8:				
Boys	12.9	10.0	18.7	41.6
Girls	21.2	1.2	1.5	23.9
Grade 9:				
Boys	14.2	13.1	17.5	44.8
Girls	25.4	0.0	1.3	26.7
Grade 10:				
Boys	11.9	14.3	17.7	43.9
Girls	28.5	0.4	1.2	30.1
Grade 11:				
Boys	21.1	10.2	18.0	49.3
Girls	24.6	0.4	0.7	25.7
Grade 12:				
Boys	13.9	12.4	21.3	47.6
Girls	26.6	0.0	0.0	26.6
Total:				
Boys	12.3	10.2	15.7	38.2
Girls	20.3	0.5	0.9	21.7

NOTE: All youth ($N > 4,000$) in grades 6 through 12 in all public and private schools were surveyed.
SOURCE: Clayton and Walden 1994.

Nicotine dependence in young people who smoke begins much earlier than previously suspected. For example, in a 3-year study of 197 girls aged 11 to 14 years, from 1985 through 1987, cotinine (a metabolite of nicotine) concentrations were found to be substantial (McNeill 1991). Even at the beginning of the study, approximately one-half of the average cotinine concentration found in adults was found in 11- to 14-year-olds who smoked daily. Two years later, the same group had cotinine levels that were more than two-thirds of those levels usually found in adults, despite the fact that these young people were in school and thus were subject to considerable restrictions on their smoking behavior. These girls had been receiving substantial doses of nicotine from a very early stage in their smoking careers, suggesting that the pharmacological effects of nicotine were already important in perpetuating their smoking.

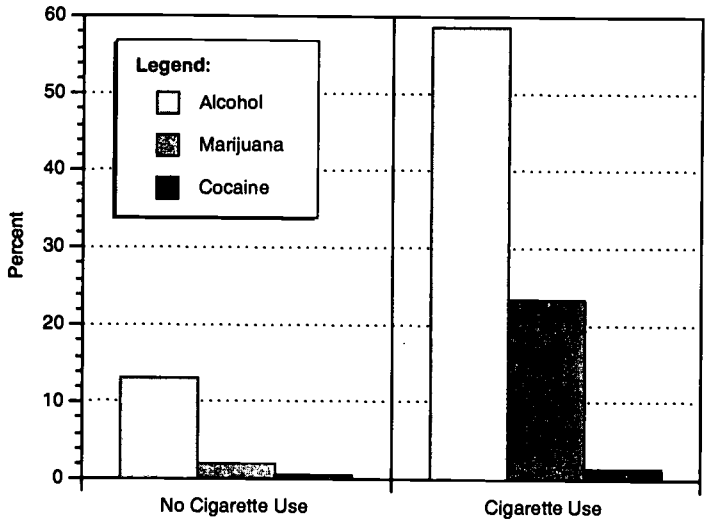
In the rural Kentucky study mentioned earlier, an attempt was made to determine how many males in grades 6 through 12 who had used tobacco in the past month were dependent as measured using nicotine dependence scales (Clayton and Walden 1994). The study revealed that:

- 24.2 percent of those who had used only cigarettes in the past month were dependent
- 22.2 percent of those who had used only smokeless tobacco in the past month were dependent
- 55.0 percent of those who had used both cigarettes and smokeless tobacco in the past month were dependent
- 34.4 percent of all those who had used any type of tobacco product were dependent

Use of Tobacco and Other Drugs

The relationship between the use of tobacco and other drugs (e.g., alcohol, marijuana, heroin, or cocaine) cannot be considered causal. That is, there is insufficient evidence to state that tobacco use results in the use of other drugs. However, there is evidence that tobacco use is associated with the experimentation and use of other drugs. Figure 1-9, which shows data on 12- to 17-year-olds in the 1994 NHSDA, shows the strength of this association (Substance Abuse and Mental Health Services Administration 1996). Four times as many of those who had used cigarettes in the past month as of those who had not used them reported use of alcohol within the same month. Further, 14 times as many had also used marijuana and 12 times as many had used cocaine. The most important aspect of this issue is that tobacco use is a risk factor for other substance use, including alcohol, marijuana, and cocaine (Bailey 1992).

FIGURE 1-9: Percentage of Youth Who Used Drugs in the Past Month, Smokers and Nonsmokers



NOTE: Numbers are extrapolations for the percentages to all youths represented by the 12- to 17-year-olds in the study sample.
SOURCE: SAMHSA 1996.

Other Risky Behavior and Tobacco Use

The Centers for Disease Control and Prevention conducts the Youth Risk Behavior Surveillance System survey with responses from more than 10,000 high school students. Just as tobacco use correlates with the use of other drugs, involvement in various other health risk behaviors correlates with the use of tobacco.

Table 1-4 shows that youth who reported engaging in health risk behaviors were more likely to be current smokers; current, frequent smokers; or current users of smokeless tobacco than youth who avoided such behaviors. For example, of those who had been in six or more fights in the past year, 30.5 percent were current, frequent smokers, whereas of those who had not been in any fights in the past year, only 8 percent were current, frequent smokers. Although these data do not suggest any kind of causal relationship, they do show that problem behaviors in youth cluster in the same individuals (Clayton 1992; Jessor and Jessor 1977). This correlation may be especially relevant at the community level as approaches are constructed to deal with the problem of tobacco use by youth.

Although this correlation between early use of tobacco and subsequent use of other drugs is of concern, tobacco use in and of itself is the primary focus of this document. Similarly, although the health risk behaviors associated with tobacco use are a public health concern, the use of tobacco by youth is emphasized in this document. The short-term and long-term health risks of tobacco use, as discussed below, magnify the need for public health resources to prevent tobacco use among youth.

Short- and Long-Term Health Risks

The short-term health risks for youth who smoke cigarettes or use smokeless tobacco are considerable. Smoking accelerates the heart rate and increases the number of red blood cells, and cyanide in cigarette smoke anesthetizes the cilia in the tracheobronchial tree. The cilia are designed to sweep the lungs and the pulmonary system of particulate matter. Thus, youth who smoke are more likely than youth who do not smoke to contract upper respiratory infections, and to have them longer.

TABLE 1-4: Involvement in Health Risk Behavior

Type of risky behavior	Percent using tobacco as: Cigarette[1] None	Cigarette[1] Current	Cigarette[1] Current and frequent	Smokeless tobacco[2]
Not wearing seat belt when riding in a car with someone else:				
Rarely/never wear	19.4	40.3	21.8	26.5
Most of the time/ sometimes wear	29.9	26.3	11.4	17.6
Always wear	39.8	17.8	6.8	13.5
Physical fighting, past year:				
≥6 times	17.4	49.3	30.5	32.1
1-5 times	22.2	35.4	17.3	23.2
0 times	36.1	20.3	8.1	13.9
Weapon carrying, past 30 days:				
1 or more days	17.2	41.1	22.2	27.5
0 days	34.5	22.6	9.4	13.3
Attempted suicide, past year:				
1 or more times	15.0	52.5	33.8	33.6
0 times	31.8	24.8	10.6	17.8
Sexual intercourse, ever:				
Yes	17.4	38.8	20.7	23.9
No	44.9	13.8	3.1	12.9
Number of sexual partners:				
≥4	14.6	47.9	30.3	24.9
1-3	19.0	33.8	15.4	23.2

[1]None—no cigarette use during the respondent's lifetime; current—cigarette use on one or more days during the 30 days preceding the survey; current and frequent—cigarette use on 20 or more days during the 30 days preceding the survey.
[2]Smokeless tobacco use during the 30 days preceding the survey; includes chewing tobacco or snuff. The data shown are for males only.
SOURCE: Centers for Disease Control and Prevention 1992b.

Smokeless tobacco contains nitrosamines, which are carcinogenic and in excessive amounts cause substantial damage to the oral mucosa, even after relatively short-term use (Offenbacher and Weathers 1985; U.S. Department of Health and Human Services 1986). The long-term health consequences of chronic cigarette use are well known: an increased risk of cardiovascular disease, cancer, and stroke (U.S. Department of Health and Human Services 1979). In individuals who have chronically used smokeless tobacco, the most widely recognized health consequences are found in the oral mucosa in the form of leukoplakia, gingivitis, hairy tongue, and cancers of the lip, tongue, salivary glands, floor of the mouth, and other structures (Offenbacher and Weathers 1985; U.S. Department of Health and Human Services 1986).

Cigarette smoking during childhood and adolescence results in coughing and phlegm production, an increased number and severity of respiratory illnesses, decreased physical fitness, an unfavorable lipid profile, and potential retardation in the rate of lung growth and the level of maximum lung function. People who begin to smoke at an early age are more likely to develop severe levels of nicotine addiction than those who start at a later age. Tobacco use is associated with alcohol and illicit drug use and is generally the first drug used by young people who enter a sequence of drug use that can include tobacco, alcohol, marijuana, and other illicit drugs. Smokeless tobacco use by adolescents is associated with early indicators of periodontal degeneration and with lesions in the oral soft tissue.

Although physical reactions to tobacco use have both immediate and long-term health consequences, young people do not consider the risk for long-term negative consequences. They use tobacco for immediate reasons, such as peer pressure and in reaction to the more powerful influences of advertising and cigarette promotion (Evans et al. 1995). Youth, however, may be concerned with the overt physical indications of tobacco use, such as stained hands and teeth and an unpleasant odor in hair and clothes (U.S. Department of Health and Human Services 1994).

Risk and Protective Factors for Tobacco Use Among Youth

In studies of substance abuse, a risk factor has been defined as "an individual attribute, individual characteristic, situational condition, or environmental context that increases the probability of drug use or abuse or a transition in level of involvement with drugs" (Clayton 1992). A protective factor has been defined as an influence that "inhibits, reduces, or buffers the probability of drug use, abuse, or a transition in the level of involvement with drugs" (Clayton 1992). Risk and protective factors may be integrated into the genetic and biological makeup of an individual, may be acquired characteristics, or may exist within the various contexts in which an individual acts out his or her roles in life.

Following is a summary of the most widely used general taxonomy of risk and protective factors for substance abuse (Hawkins et al. 1992):

- Federal, State, and local laws and norms (e.g., taxation; laws making drugs illegal; laws regulating how, when, where, and to whom legal drugs can be distributed)
- Cultural norms (e.g., marketing images of tobacco and tobacco users, social pressure from peers to use tobacco)
- Availability of tobacco products
- Poverty and social disorganization (e.g., extreme economic deprivation, neighborhood disorganization)
- Physiological factors (e.g., biochemical, genetic)

- Family factors (e.g., family drug use, family management practices, family conflict, poor bonding with family)
- School factors (e.g., academic failure, low intelligence, low commitment to school, rejection by peers in elementary school)
- Early and persistent problem behaviors (early onset of drug use)
- Peer factors, personality, attitudes (e.g., association with drug-using peers, alienation and rebelliousness, attitudes favorable to drug use)

TABLE 1-5: Psychosocial Risk Factors in the Initiation of Tobacco Use Among Adolescents

Risk factor	Smoking	Smokeless tobacco
Sociodemographic factors:		
Low socioeconomic status	x	
Delayed developmental state	x	x
Male gender		x
Environmental factors:		
Accessibility	x	x
Advertising	x	x
Parental use	x	x
Sibling use	x	
Peer use	x	x
Normative expectations	x	x
Poor social support	x	
Behavioral factors:		
Poor academic achievement	x	x
Other problem behaviors	x	x
Constructive behaviors	x	
Behavioral skills	x	
Intentions	x	x
Experimentation	x	x
Personal factors:		
Knowledge of consequences		x
Functional meanings:		
Subjective expected utility	x	
Self-esteem/self-image	x	x
Self-efficacy	x	
Personality factors	x	
Psychological well-being	x	

SOURCE: U.S. Department of Health and Human Services 1994.

Unfortunately, research on specific risk and protective factors for tobacco use is relatively new (Bry et al. 1982; Newcomb et al. 1986). This knowledge base is further limited because most studies have focused on risk rather than protective factors and predictors of initiation rather than predictors of the other stages (Clayton 1992) of cigarette and smokeless tobacco use (e.g., continuation, progression, and addiction within the tobacco category and from tobacco to other illicit drugs, regression, cessation, and relapse prevention).

A number of risk factors have nevertheless been shown to be related to the initiation of tobacco use by youth (U.S. Department of Health and Human Services 1994). In the 1994 Surgeon General's Report, these are classified into sociodemographic, environmental, behavioral, and personal factors (Table 1-5). Following is a general overview of these factors, which can help provide a picture of the antecedents of tobacco use among youth. It should be borne in mind that much more needs to be discovered about these risk factors. A review of the literature on these risk factors can be found in the Surgeon General's report *Preventing Tobacco Use Among Young People* (U.S. Department of Health and Human Services 1994).

Sociodemographic Factors

Sociodemographic factors that affect an adolescent's risk for initiating tobacco use have an indirect but powerful influence. An adolescent's social development may be hampered when there is a discrepancy between what he or she aspires to and what he or she is actually able to achieve, due to the limitations of the political, social, economic, and educational systems of society. Among the most notable of these risk factors are the following (U.S. Department of Health and Human Services 1994):

- Low socioeconomic status
- Low parental educational attainment
- Single-parent household
- Developmental challenges of adolescence:
  - — Physical and sexual maturation
  - — Cultural pressures to make the transition to adulthood
  - — Establishing self-identity and personal values
- Male gender
- Hispanic or black ethnic/cultural background

Environmental Factors

Environmental factors are those that are, or are perceived to be, external to an individual but that may nonetheless affect his or her behavior. A number of these factors are related to the individual's family of origin, while others have to do with social norms and expectations:

- Acceptability and availability of tobacco products
- Interpersonal factors:
  - — Parental tobacco use
  - — Sibling tobacco use
  - — Peer tobacco use
  - — Strong attachments to peers who use tobacco
  - — Participation in antisocial activities
- Perceived environmental factors:
  - — Normative expectations of tobacco use
  - — Social support for tobacco use
  - — Parental acceptance or tolerance of tobacco use
  - — Adult discrepancy (i.e., between "adult" behaviors in which an adolescent wants to participate and what was actually done by his or her parents at the same age)

Another environmental risk/protective factor for cigarette use that deserves special mention is region of residence. In the MTF study of high school seniors from 1975 through 1993, those from the Northeast consistently had the highest prevalence of

daily smoking, whereas those from the West had the lowest. Since 1975, the prevalence of daily smoking among high-school seniors from the South has been consistently lower than that among seniors from either the Northeast or the North Central States.

Behavioral Factors

Certain patterns of behavior predispose youth to begin using tobacco. Most prominent of these are behaviors that lead to the perception of tobacco use as functional or appropriate:

- Low academic achievement
- Use of alcohol or illicit drugs
- Risk-taking, rebellious, and deviant behavior patterns
- Strong attachment to peer groups and weak attachment to family
- Lack of participation in athletics or other health-enhancing behaviors
- Weak or absent resistance or refusal skills
- Stress

Personal Factors

Personal factors are the cognitive processes, values, personality constructs, and sense of psychological well-being inherent to the individual and through which societal and environmental influences are filtered. To some extent, these factors explain differences in the behaviors of people exposed to the same outside influences. A number of personal risk factors have been shown to be related to the start of tobacco use by youth:

- Denial or minimization of health consequences of tobacco use
- Perception of tobacco use as serving a purpose (e.g., to seem mature, gain peer acceptance, cope with personal problems or boredom)
- Positive subjective expected utility (i.e., the extent to which a behavior is expected to have positive or negative effects)
- Low self-esteem (i.e., one's subjective evaluation of oneself)
- Perceived negative self-image (i.e., one's perceived external image)
- Low self-confidence
- Deficiencies in self-control (e.g., impulsiveness and sensation-seeking tendencies)
- Low psychological well-being

The variety and diversity of these personal risk factors suggests that researchers in this area have not yet identified a universally accepted, limited constellation of personal factors that explain why adolescents begin using tobacco.

Summary

More research needs to be conducted on the risk and protective factors for initiation as well as other stages of use of tobacco products (continuation, progression, addiction, regression, cessation, and relapse prevention) before definitive statements can be made. As the knowledge base expands, it will be possible to provide States and communities with much clearer advice concerning approaches for reducing youth tobacco use. In the meantime, a number of observations can be drawn from the information presented in this chapter:

- Use of and attitudes toward tobacco use have changed over time. A largely negative view of tobacco use at the end of the 19th century changed to a more positive view, promulgated by lobbying and advertising by the tobacco industry in the early 20th century. In today's more health-conscious society that view is once again evolving to emphasize the negative aspects of tobacco use.
- Current negative attitudes about tobacco use are reflected in the increase in restrictions on its use in public facilities and workplaces.
- These same attitudes and restrictions, however, are not mirrored in the use of tobacco among youth, which seems to be on the rise.
- The complexity of the reasons for and patterns of tobacco use among youth requires that epidemiological analyses include separate profiles of cigarettes only, smokeless tobacco only, and concomitant use of both.
- A better understanding of the risk and protective factors for tobacco use among youth is needed to develop and institute prevention programs that are effective in reaching their intended audiences and delaying, if not preventing, the adverse consequences of this threat to the health of our nation's children.

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2 | Community-Based Prevention

Each year, more than 400,000 Americans die prematurely from smoking-related illnesses (Centers for Disease Control and Prevention 1993a). This number of fatalities is equal to that of the deaths of everyone on two completely loaded 747 jumbo jets crashing every day. It is more than all the deaths caused each year by suicide, homicide, automobile crashes, alcohol, illicit drugs, and AIDS combined. It is more than seven times the number of Americans who died during the entire course of the Vietnam War (McGinnis and Foege 1993; U.S. Department of Health and Human Services 1994).

Each year smoking-related illnesses claim the lives of more Americans than all other major causes of death combined.

Tobacco use reduces the quality of life for everyone in a community, whether they smoke or not. Apart from the more obvious health-related effects of tobacco use on individuals—both those who smoke and those exposed to secondhand smoke—there are less obvious overall economic effects of tobacco use on the community.

When an individual in a community or society becomes ill or dies prematurely, the community loses the human and economic contributions of that individual. The congressional Office of Technology Assessment (OTA) estimated that, on average, persons who died in 1990 due to smoking would have lived at least 15 additional years had they not smoked (Herdman et al. 1993). Each year, this premature mortality results in six million years of potential life lost for the U.S. population. While calculations of the health care costs of tobacco use vary, OTA estimated that in 1990 the expenditures

included $20.8 billion in direct health costs, $6.9 billion in lost productivity due to disease, and $40.3 billion in lost productivity due to premature deaths. For 1993, the direct health care cost of tobacco use was estimated to be $50 billion (Centers for Disease Control and Prevention, 1994). Everyone in a community is affected by these costs, whether directly as a family member or indirectly through increased medical and tax expenditures (Institute of Medicine 1994).

Generally speaking, community-based approaches aimed at reducing the incidence of certain health problems seek small but pervasive changes that apply to the majority of a population (Green and Kreuter 1991). Community-based approaches are aimed at ameliorating the quality-of-life and economic costs of illness to society. Practitioners can use these approaches to address the environmental and behavioral risk factors for tobacco use among youth identified in Chapter 1. For example, practitioners can design community-based approaches to change community perceptions of the acceptability of tobacco use among youth or to improve the ability of youth to refuse tobacco products when offered by friends.

For community-based prevention approaches to be most effective requires an understanding of the basis for and the advantages of choosing community-based approaches over individual-centered approaches. This chapter reviews tobacco use among youth within the context of the larger community and presents a rationale for community-based approaches to prevention.

Tobacco Use Among Youth as a Community Problem

When young people smoke, they are often initiating a history of smoking that will eventually cost them and the rest of society huge amounts of money for health care. Health care costs are the fastest growing costs in our society. Communities have reason to be concerned about the use of tobacco products by youth because of the short- and long-term health consequences of tobacco use (see Chapter 1) as well as the associated health care costs. Likewise, community members have reason for concern when behavior that ultimately claims so many lives is being practiced by their own children and by their neighbors' children.

Very few communities, however, have labeled the use of tobacco products by youth as a community problem. There is nothing communities could do that would have more far-reaching effects on the health and safety of youth than making prevention of tobacco use a top priority (U.S. Department of Health and Human Services 1994). The sale and distribution of tobacco products to youth are illegal. Most communities have no difficulty generating broad-based concern about use of other substances, such as alcohol, marijuana, LSD, cocaine, and heroin, by youth. But most communities do not view tobacco use by youth as a drug use problem, despite the fact that nicotine can be an addictive drug like alcohol, marijuana, heroin, and cocaine. In fact, there is some

evidence that a larger percentage of people who experiment with nicotine become dependent on it than is true for cocaine experimentors (Henningfield et al. 1990; U.S. Department of Health and Human Services 1988). In the light of such evidence, communities should redefine their concerns about the use of illicit drugs to include tobacco products.

Moreover, research has shown that unhealthy and risky behaviors seem to cluster in some individuals (Clayton 1992; Jessor and Jessor 1977). Cigarette use, for example, may be a marker for the use of other drugs. Of 12- to 17-year-olds who currently smoke cigarettes, 25 percent have used marijuana in the past month (SAMHSA 1994). Of 12- to 17-year-olds who do not currently smoke, only 2 percent have used marijuana in the past month. The same degree of statistical association exists between cigarette smoking and various other problem behaviors, such as delinquency, risky sexual behavior, fighting, aggression, carrying and using weapons, and other forms of violence (Centers for Disease Control and Prevention 1993b).

Rationale for Community-Based Programs

All of us live in communities. We share values with our neighbors, such as wanting our children to be safe and healthy. To that end, we protect our children in several ways. Many States and communities have implemented mandatory seat belt laws to protect us and our young people from being injured or killed in traffic incidents. Virtually all States and communities have implemented and enforced laws that prohibit the sale of illicit drugs within a certain distance of schools. Many school systems have installed metal detectors to protect our young people from being hurt by weapons taken to school. Quite a few communities give full support to special drug prevention events, such as Red Ribbon Week and Project Graduation.

For most of the 20th century, the approach to preventing substance abuse has focused on the individual rather than on his or her environment. This individual-centered approach assumes that the most important causes of substance abuse, including tobacco, lie within the individual—in his or her attitudes, values, and personality (Gerstein and Green 1993; Hansen 1992). This assumption does not fully take into account the fact that individuals exist and function in a variety of environmental contexts. Each exerts an influence on attitudes, behavior, and perceptions of the norms of appropriate and inappropriate behavior.

The past two decades have been marked by an increasing awareness of the importance of focusing on the environmental contexts of substance abuse as well as on the individual. In terms of tobacco use among youth, these contexts may include use by peers, siblings, and parents or images of tobacco use promulgated by media and advertising. Within these and other environmental contexts, the use of tobacco or other substances acquires additional levels of meaning beyond those that relate strictly to the individual (e.g., self-esteem or a subjective sense of well-being). Within these

environmental contexts exist modifiable elements that, when addressed, can alter the social structures that provide opportunities to use tobacco or other drugs.

Individual-Centered Approaches

A number of interventions have been designed to delay the start of smoking or to persuade young people not to continue to smoke. Nearly all of these have focused on the individual and have been school based and curriculum driven. The state-of-the-art approach is the *social influences model.* School programs based on the social influences model generally have the following components in common (Hansen 1992):

- Use of information on the short- and long-term health and social consequences of smoking and on the social factors that influence smoking
- Discussion of the influence of peers, family, and the media on smoking and ways to deal with them
- Modeling, typically using video or film or peers to show these influences and situations, along with coping behaviors
- Role playing and learning of behavioral skills
- Public commitment regarding smoking intention

Most curricula on social influences or peer resistance either explicitly or implicitly incorporate methods for enhancing a young person's perceived self-efficacy (Gerstein and Green 1993; Pentz et al. 1989a) by:

- Specifying explicit near-term goals
- Promoting performance accomplishments through participation and practice
- Providing models of successful resistance behavior
- Providing task-specific feedback that reinforces and validates successful performance

These types of programs focus intensely on changing the potential smoker's attitudes, knowledge, perceptions, and intention with regard to smoking (Best et al. 1984; Brook et al. 1992; DiFranza 1989; Flay et al. 1989; Gerstein and Green 1993; Hawkins and Weis 1985; Leventhal et al. 1991; Pentz et al. 1989b; Perry et al. 1992; Scheier and Newcomb 1991). In addition, youth are assembled together in schools and are accustomed to learning through curricula.

However, there is evidence that the effects of these prevention programs that dissipate over time can be enhanced with booster sessions to extend the effects throughout the high school years. In addition, the effectiveness of school-based programs appears to be enhanced by community-wide programs that utilize the positive social influences of parents, community organizations, and mass media.

Some of these programs have shown evidence of a short-term delay in beginning smoking. A few such programs report modest, though statistically significant, long-

term effects. In virtually all of the studies of the long-term effects of well designed smoking prevention programs to date, however, the effects have been shown to be temporary. Within 5 to 7 years after the intervention, the prevalence of smoking among those who were "inoculated" against it has been the same as that for those who were not inoculated (Botvin et al. 1993; Resinow and Botvin 1993).

Community-Based Approaches

In this discussion of community-based approaches, the term community is comprehensive and includes large cities, small towns, schools, worksites, and public places. For a community approach to be successful, certain criteria regarding the health problem and methods to change it must be met (Green and Kreuter 1991; Puska et al. 1985). Following are some of these criteria:

- The health problem, behavior, or condition must be pervasive in a given community.
- A majority of the factors that affect the problem must be external to the individual (i.e., social or environmental).
- It must be possible to change the health problem through community channels.
- The magnitude and nature of the problem must preclude a simple, externally imposed solution.
- The community must be ready to change the problem.

For most communities, the first four of these criteria are met for the problem of tobacco use among youth. Most youth have either tried tobacco or use it on a regular basis. The factors affecting this use include permissiveness toward use of tobacco and general accessibility to tobacco products by youth. Community forces can be mobilized to change the health problem; for example, city councils have passed ordinances to enforce laws that prohibit tobacco sales to minors. Simple environmental solutions such as enacting no-smoking policies, however, are not sufficient to reduce tobacco use by adolescents. Indeed, while none of the approaches described above are sufficient when used alone, they are worthwhile, especially when delivered in the context of a multicomponent prevention campaign.

Community readiness to address the problem varies considerably nationwide. The community-based approach, however, includes methods to ready the community for change, thereby beginning the process of solving the problem.

Cost-Effectiveness. Although community approaches often require more resources than do individual-focused approaches, there are advantages to community approaches that can make it more cost-effective over the long term. The most important of these is the potential for synergism, a multiplicative intervention effect, with the use of multiple strategies. A community approach with multiple components that are designed to be complementary may be more effective than individual-focused strategies designed in

isolation (Farquhar et al. 1990). Other advantages of community-based intervention approaches include the following (Farquhar et al. 1990; Green and Kreuter 1991; Puska et al. 1985; Thompson et al. 1991):

- They are particularly effective when inherently efficient intervention channels, such as mass media, are used.
- They can result in extensive population-wide changes in health behavior or health status.
- They involve a greater number and diversity of people and organizations in the community that can provide greater support for the desired change and can promote change among community members who might never be reached by an individual approach.
- They enhance the possibility of altering behavioral norms and environmental factors, such as regulations.
- Participation by multiple organizations and volunteers can reduce the funds needed to implement intervention activities.
- They form an important link between basic laboratory and clinical research and the large-scale application of public health programs by:
  - Diminishing uncertainty concerning the effectiveness of an approach by implementing it in practice
  - Informing practitioners about the effective use of prevention resources
  - Identifying unintended consequences of program implementation
- They can result in sustained community change and organization once the effort has been adopted by the community.
- They target multiple groups for behavior change (i.e., parents, youth, merchants, public officials, law enforcement) based on the knowledge that responsibility for addressing the problems is shared by many, not just youth. These interventions also address the social origins of the problem, helping to avoid blaming the victim.

These advantages have been validated in several areas of public health community research, including the prevention of cardiovascular disease, smoking cessation approaches, and local approaches to the control of alcohol availability (Farquhar et al. 1990; Green and Kreuter 1991; Puska et al. 1985; Thompson et al. 1991). Perhaps the most instructive community-based programs have been those implemented to prevent cardiovascular disease. Well-known examples of studies in this area are the Stanford Five Cities Project (Farquhar et al. 1990), the North Karelia Project (Puska et al. 1985), and the Minnesota Heart Health Program (Luepker et al. 1994). Each of these programs resulted in considerable community involvement and acceptance of the program. Important components of these programs include organization and education of communities or cities regarding the importance of preventing heart

disease, media messages through multiple channels, and the active participation of community members in the project. Both the Stanford and North Karelia projects resulted in significant changes in the risk status of members of the intervention communities. Although the same findings were documented in the Minnesota program, the comparison communities also modified their behavior (probably due to healthy lifestyle changes), resulting in virtually no difference in risk status between intervention and comparison communities.

Advantages. The community-based approach has certain advantages over an individual-centered approach to prevent tobacco use; these advantages are outlined in the following sections.

Coverage. The first and most obvious advantage of community-based programs is coverage. As an example, one community-based approach for reducing tobacco use by youth involves the requirement that anyone involved in any way with the sale and distribution of tobacco products participate in a merchant education program (Feighery et al. 1991). This would cover all outlets for tobacco products, so that the focus of the intervention would be on the point of purchase instead of on individuals who might want to obtain cigarettes or other tobacco products. The coverage or exposure of the prevention effort is enhanced because of the intervention target.

Maximization of Resources. A second obvious advantage of community-based efforts is that they maximize the efficient use of scarce resources while minimizing costs. For example, in a community of 750,000, there might be between 70,000 and 90,000 students. To provide an effective individual-based program for smoking prevention would require a large number of person-hours of involvement in teaching the curriculum. Providing merchant education about the requirements of the law and how to resist selling tobacco products to minors, however, would require far less effort and money, primarily because there are fewer clerks than there are potential underaged buyers (Woodruff et al. 1993). In addition, the material to be learned is less extensive and complex.

Maximization of Outcomes. The third obvious advantage of community-based prevention efforts over individual-centered approaches is the potential for maximizing outcomes. The utility of community approaches lies in the fact that they can be focused on policy changes. Policies dictate how business is conducted, regardless of the setting (school, workplace, community) and provide clear parameters of what is and is not acceptable. The likelihood of reducing tobacco use by adolescents depends partly on the uniformity of standard operating procedures.

For example, the school board in a community might make the reduction of tobacco use by youth a top priority (Johnson et al. 1990; Pentz et al. 1989c). The school board could adopt a policy for all teachers, other staff, and students of no smoking anywhere on campus at any time. This type of policy is clear and unambiguous. It

covers all environmental settings that fall under the category of "school." It covers all roles—students, teachers, administrators, coaches, custodians, and cafeteria workers—within that environmental context. If smoking is not allowed anywhere on campus, even during off-hours school events, there will be a good likelihood of achieving the desired outcome.

Visibility. The fourth advantage of community-based approaches is their visibility and repetitive reinforcement, which strengthens norms against tobacco use by youth. One of the most visible and effective tobacco use prevention efforts was California's Proposition 99. This legislation enabled two statewide approaches—an increase in the State tax on tobacco products and a counteradvertising campaign with many mass media public service announcements (Glantz 1993). Youth in California received multiple, reinforcing messages about the expense and dangers of tobacco use. In addition, the legislation funded local community groups, such as boys' and girls' clubs.

Finally, in summarizing the advantages of community-based approaches, one cannot overlook their synergistic effect in reaching various targets within the community.

Sociological Framework for Tobacco Control

Legal and social norms concerning the use of tobacco products have undergone major changes in the last 100 years. During the first three decades of the 20th century, smoking was disapproved of as inappropriate for minors. Smoking by minors was considered a sign of delinquent tendencies and even legally defined in many jurisdictions as a form of delinquency (Troyer and Markle 1983). From the 1930s to the 1960s, smoking became acceptable, even fashionable, in many segments of society. By the 1960s, teenage smoking was widespread and generally not viewed as a problem.

Recently, however, there has been a major shift in the United States toward greater disapproval of smoking by minors (Markle and Troyer 1979; Neuhring and Markle 1974; Troyer and Markle 1983). This shift is due to the body of overwhelming scientific evidence about the health effects of smoking, broad-based concern about and efforts to eliminate drug use among adolescents, and an increasing level of concern about and intolerance of smoking in general.

The social context in which tobacco products exist, however, is changing dramatically, as reflected by events in the summer of 1994: The Commissioner of the Food and Drug Administration (FDA) publicly raised the issue of whether it should regulate products containing nicotine because nicotine is an addictive drug (Kessler 1994). In nationally televised hearings, representatives of the tobacco industry were taken to task for suppressing information that could establish the abuse liability of nicotine. Since then, numerous State liability suits have been filed, several Department of

Justice actions have been taken against the tobacco industry related to perjury charges, and the FDA final rule has been released.

The social context of the use of tobacco products in the United States has undergone a shift from being socially acceptable to recognition that tobacco use is a major public health problem. In many ways, being tobacco-free is seen as the norm. Tobacco users are faced with vast amounts of information on the negative health effects of tobacco use and are subject to increasing restrictions designed to protect nonsmokers from the harmful effects of tobacco smoke.

Importance of Social Context

Tobacco control is the term used to describe the range of efforts employed to regulate tobacco products (Altman et al. 1992). Tobacco control efforts have been implemented at all levels of government (Bal et al. 1990; Centers for Disease Control and Prevention 1991; Choi et al. 1991) and consist primarily of the following types of activities:

- Imposition of sales taxes on the product (Coalition on Smoking OR Health 1993)
- Requirements for warning labels on each package
- Restrictions on advertising of the products (Ericksen et al. 1990; Flay 1987; Pierce et al. 1991)
- Regulation and licensing of outlets that distribute tobacco products through over-the-counter or vending machine sales (Barovich et al. 1991; Centers for Disease Control and Prevention 1992b; Cummings et al. 1992; Feighery et al. 1991; Forster et al. 1992)
- Restrictions on where, when, and by whom the products can be used
- A minimum age requirement for purchase of the products (Davis and Jason 1988; Hoppock and Houston 1990)

In most communities, tobacco control has consisted primarily of activities designed to increase awareness of the consequences of smoking, advocacy of restrictions on smoking, and smoking cessation programs. The most readily recognized activities include the American Cancer Society's yearly Great American Smoke-Out, advocacy campaigns for reducing the number of places where people are allowed to smoke, and the smoking cessation programs offered by the American Cancer Society, the American Lung Association, and the American Heart Association. Although the prevalance of lifetime experience with cigarettes declined steadily from 1975 to 1990, it now appears to be on the rise (Institute of Medicine 1994). Because there are still 50 million people who smoke in the United States (SAMSHA 1994), this is an extremely important target for tobacco control efforts.

As the number of smokers who successfully quit levels off, those who continue to smoke are likely to be the most addicted. Although targeting chronic smokers should remain a priority, the next greatest gain in lowering the number of smokers will likely come from efforts aimed at preventing initial nicotine addiction, such as stringent regulations governing advertising and youth access, and by reducing the appeal of tobacco products to youth.

Examples of such initiatives are mass media campaigns that address adolescents' tobacco-related attitudes and provide information about the effects of smoking, increases in Federal and State tobacco taxes, reduction of access to tobacco products by adolescents at retail outlets, enactment of tobacco-free environment policies to reduce adolescents' exposure to pro-tobacco messages, and implementation of policies that prohibit tobacco sponsorship of sporting and other events and reduce the number of tobacco advertisements to which youth are regularly exposed.

The social context of tobacco control depends on several factors:

- **Number of Tobacco Users**—Twenty-five percent of the U.S. population aged 18 years or older smokes (Federal Trade Commission 1995); this figure is down from 31 percent in 1985 and 26 percent in 1992. An estimated 6.1 million Americans, 2.9 percent of the population aged 12 and older, were current users of smokeless tobacco in 1993 (Hugick and Leonard 1991; National Institute on Drug Abuse 1992; Substance Abuse and Mental Health Services Administration 1994).
- **Laws and Regulations**—A critical mass of laws and regulations has been imposed on tobacco as a commercial commodity (see Boxes 2-1, 2-2, 2-3). The passage of the Synar Amendment (which requires States to demonstrate good-faith efforts to prevent the sale of tobacco to minors) and the movement by the FDA toward defining nicotine as an addictive drug suggest a tightening of Federal regulations on tobacco (Kessler 1994, U.S. Department of Health and Human Services 1990).
- **Federal, State, and Local Initiatives**—Communities are increasing the number of restrictions on the use of tobacco products in public places, choosing to limit or even ban smoking in restaurants and on all forms of public transportation (Gallup and Newport 1990). The Federal Government supports and encourages State initiatives through the funding of studies and programs such as the American Stop Smoking Intervention Study (ASSIST), funded by the National Cancer Institute, and Initiatives to Mobilize for the Prevention and Control of Tobacco Use (IMPACT), funded by the Centers for Disease Control and Prevention. A number of States have also filed lawsuits against the tobacco industry. In addition, the Robert Wood Johnson Foundation, through the American Medical Association, is funding State initiatives for tobacco control.

These projects include helping States strengthen their tobacco policies and providing prevention education and information resources on health problems and tobacco.

Despite major advances in communicating the health consequences of tobacco use, changes in the laws and regulations concerning tobacco as a commodity, and widespread State and local initiatives to restrict smoking, the social context of tobacco control is not unidirectional. There are numerous groups emerging to defend "smokers' rights." The tobacco industry spent more than $6 billion on advertising in 1993 (Federal Trade Commission 1995). Despite a ban on advertising tobacco products on television, it is impossible to escape manufacturers' logos on weekend television because they sponsor sporting events that are shown for several hours at a time (Blum 1991). There also has been a proliferation of cups, shirts, and hats carrying tobacco

BOX 2-1: Two Sets of Tobacco Regulations

Both the Substance Abuse and Mental Health Services Administration (SAMHSA) in the Department of Health and Human Services (DHHS) and the Food and Drug Administration (FDA) have taken steps to address the serious public health problems caused by young people's use of and addiction to tobacco products.

But why two sets of regulations?

The answer to that question lies in an examination of the focus of these two sets of rules. While the final rule issued by SAMHSA is directed to the States, the FDA proposal focuses on the tobacco industry and retailers.

The 1992 Synar Amendment mandated that all States enact and enforce laws barring the sale and distribution of tobacco products to minors. But a mechanism to ensure compliance with the amendment was absent. Even though all States outlaw tobacco sales to anyone under the age of 18, these laws are not strictly enforced. SAMHSA developed regulations designed to pressure States to enforce the amendment by decreasing the annual Substance Abuse Prevention and Treatment Block Grant award for States that did not comply with the enforcement and reporting requirements and totally withholding block grant funds from the States that did not enact the required prohibitions.

The SAMHSA regulations (see Box 2-2) were written in anticipation of passage of the FDA tobacco regulations (Box 2-3), which further enhance the Synar Amendment by not only making the sale of cigarettes and smokeless tobacco to anyone under 18 years of age a Federal violation but by placing limits on tobacco advertising and essentially banning self-service displays and vending machines.

In short, both sets of regulations ban the sale of cigarettes and smokeless tobacco to minors. Additionally, the FDA regulations place limits on marketing and distribution, and the SAMHSA regulations promote compliance by the States.

SOURCE: U.S. Department of Health and Human Services, Substance Abuse Prevention and Treatment Block Grants: Regulations for Sale or Distribution of Tobacco Products to Individuals Under 18 Years of Age, *Federal Register*, Aug. 23, 1993; Food and Drug Administration, Executive Summary, The Regulations Restricting the Sale and Distribution of Cigarettes and Smokeless Tobacco to Protect Children and Adolescents, August 1996.

BOX 2-2: *Substance Abuse Prevention and Treatment Block Grants: Regulations for Sale or Distribution of Tobacco Products to Individuals Under 18 Years of Age*—a Summary of the SAMHSA Tobacco Regulation

In 1993, the Substance Abuse and Mental Health Services Administration (SAMHSA) submitted to the *Federal Register* for publication its final regulation implementing Section 1926 of the Public Health Service Act prohibiting the sale or distribution of tobacco products to minors.

After considering comments received from the health community, State agencies, and tobacco product manufacturers and retailers, the SAMHSA regulation was finalized as a key component in the strategy to reduce tobacco use by youth.

Designed to implement the Synar Amendment while complementing FDA regulations that further expand the effort to relieve problems related to tobacco use, the regulation requires States to

- Enact a law prohibiting any manufacturer, retailer, or distributor of tobacco products from selling or distributing such products to any individual under the age of 18.
- Enforce the law in a manner that can reasonably be expected to reduce the availability of tobacco products to individuals under the age of 18.
- Conduct annual random, unannounced inspections of a valid sample of outlets accessible to youth to ensure compliance with the law.
- Develop a strategy and time frame for achieving an inspection failure rate of less than 20% of outlets accessible to youth.
- Report annually as part of the block grant application, detailing the State's activities to enforce the law and its success during the previous fiscal year in reducing tobacco availability to youth, describing how inspections were conducted and the methods used to target outlets, as well as plans for enforcing the law in the coming fiscal year.

The Secretary of DHHS is required by statute to withhold all funds from States that have not enacted the required prohibitions and to decrease the annual Substance Abuse Prevention and Treatment Block Grant award for States that do not comply with the enforcement and reporting requirements.

SOURCE: U.S. Department of Health and Human Services, Substance Abuse Prevention and Treatment Block Grants: Regulations for Sale or Distribution of Tobacco Products to Individuals Under 18 Years of Age, *fact* sheet, August 1993.

logos (Altman et al. 1991; Barovich et al. 1991; DiFranza et al. 1991; Fischer et al. 1991).

Moreover, despite grassroots efforts to restrict smoking, lobbyists for the tobacco industry have been able to blunt further restrictions on smoking by some State legislatures. They continue to do so through two legislative methods.

The first method, preemption, would place tobacco control at the State rather than the local level. Many of the most restrictive ordinances on access to tobacco by youth and smoking in public places have been adopted by cities and counties. In an effort to rescind these ordinances, the tobacco industry lobbies State legislatures to adopt less restrictive laws preempting the local ordinances.

BOX 2-3: *Regulations Restricting the Sale and Distribution of Cigarettes and Smokeless Tobacco to Protect Children and Adolescents*—a Summary

The August 1996 publication of a final rule on tobacco in the *Federal Register* mandates that the Food and Drug Administration (FDA) regulate the sale and distribution of cigarettes and smokeless tobacco to children and adolescents.

The rule prohibits the sale of cigarettes and smokeless tobacco to those under 18 while leaving them on the market for adults.

Restricting Access by Children and Adolescents

- *Minimum Age*—The regulation prohibits retailers from selling cigarettes and smokeless tobacco to anyone younger than 18 years of age. Retailers must verify that purchasers are 18 or older by checking identification that includes the bearer's date of birth and photograph.
- *Minimum Package Size*—The regulation establishes 20 cigarettes as the minimum package size.
- *Vending Machines*—Vending machine sales of cigarettes and smokeless tobacco are prohibited except where the retailer or operator ensures that no person younger than 18 is present or permitted to enter at any time.
- *Self-Service Displays*—The use of self-service displays of tobacco products is prohibited except where retailers ensure that persons under the age of 18 are not present at any time.
- *Mail-Order Sales and Coupon Redemption*—Mail-order sale of tobacco products to adults is allowed; however, the FDA will monitor sales. Coupon redemption for free or discounted cigarettes through the mail is not allowed. Adults are allowed to receive coupons through the mail but must redeem them in person.
- *Free Samples*—The distribution of free cigarette or smokeless tobacco samples is prohibited.

Reducing the Appeal of Advertising to Children and Adolescents

- *Billboards Near Schools and Playgrounds*—Tobacco advertisements on billboards and other outdoor advertising are prohibited within 1,000 feet of elementary and secondary schools and public playgrounds.
- *Text-Only Format*—Cigarette and smokeless tobacco advertising is limited to black text on a white background, with two exceptions: in publications with a primarily adult readership and in adult-only facilities.
- *Sale and Distribution of Non-Tobacco Items and Services*—The tobacco industry is prohibited from disseminating any non-tobacco item or service that identifies that item or service with tobacco products, such as shirts, caps, and sporting goods.
- *Sponsorship of Events*—Tobacco companies are prohibited from sponsoring any sporting, cultural, or other event using a brand name, logo, colors, or anything else that would associate that event with particular cigarettes or smokeless tobacco. However, tobacco companies may sponsor events in the corporate name.

Educating People About Health Risks

Section 518(a) of the Federal Food, Drug, and Cosmetic Act requires device manufacturers to notify users about an unreasonable risk of substantial harm posed by a device. Because cigarettes and smokeless tobacco are now classified as nicotine delivery devices, the six major tobacco companies will be notified by the FDA that a national multimedia campaign advising the public of the dangers posed by cigarettes is required.

Continued

BOX 2-3: *Continued*

Relationship Between Federal and State and Local Laws

State and local laws pertaining to the sale and distribution of cigarettes and smokeless tobacco that differ from or add to Federal requirements are preempted. State and local laws unrelated to the rule, such as restrictions on smoking in restaurants, are not affected.

Analysis of Economic Impact

The rule is expected to produce significant health-related benefits, saving between $28 billion and $43 billion per year. The FDA estimates that the rule will impose one-time costs of between $174 million and $187 million per year and recurring annual operating costs of between $149 million and $185 million. The agency will monitor the effectiveness of the regulations and the extent to which individual provisions are followed.

Implementation

Most provisions of the rule go into effect one year after publication in the *Federal Register*, with two major exceptions: Six months after publication, retailers must begin enforcing the 18-year-old minimum age provision by checking the purchasers' identification and, because most sponsorship contracts are long term, companies will have 2 years to meet the requirement that prohibits sponsorship of events in the name of a tobacco product.

SOURCE: U.S. Food and Drug Administration, Executive Summary: The Regulations Restricting the Sale and Distribution of Cigarettes and Smokeless Tobacco to Protect Children and Adolescents, August 1996.

The second method, changes in earmarking of State tobacco tax revenues, seeks to weaken the effect of increases in State taxes on tobacco products. Recently, the States of California and Massachusetts increased taxes on tobacco products and earmarked a portion of these funds for tobacco use prevention initiatives. In California, the increase in taxes and a prevention media campaign significantly reduced tobacco use by adolescents (Glantz 1993). After the first several years of the campaign, the tobacco industry successfully lobbied to reduce funding for the media campaigns and put more of the tobacco revenues into general health funds. Concurrently with the reduced prevention efforts, the initial decline in tobacco use among youth in California leveled off. In Massachusetts, a combination of tobacco industry lobbying and State revenue shortfalls resulted in the diversion of tobacco tax funds from tobacco use prevention to general health funds (STAT 1994).

On a more positive note, the governor of Massachusetts signed into law an amendment to the 1995 budget that allows the State's Attorney General to sue tobacco companies for recovery of Medicaid expenditures attributable to tobacco-caused diseases (STAT 1994). Massachusetts was the second State to enact such a law. The first, Florida, enacted the Medicaid Third-Party Liability Act, which was aimed at cigarette manufacturers and has been challenged as unconstitutional by Phillip Morris,

Inc.; Associated Industries of Florida, Inc.; Publix Supermarkets, Inc.; and the National Association of Convenience Stores, Inc. (STAT 1994). Numerous States and several local jurisdictions have filed similar suits.

It is clear, however, that the social context for tobacco control for youth, although not entirely positive, is as good as it has ever been. Virtually no one, including those in the tobacco industry, openly advocates the use of tobacco products by adolescents, and this is a key element of the potential for change (Slade 1993). Opponents of tobacco control attempt to divert attention from the use of tobacco products by adolescents by raising issues such as the economic benefits associated with growing, selling, advertising, and taxing tobacco; protecting commercial free speech; and protecting the vanishing family farm.

Assessing Community Readiness

Teenagers have been a primary target of tobacco use prevention efforts (Pentz et al. 1989a, 1989b, 1989c), reflecting societal concern about drug use among adolescents. This concern was reflected at the Federal level by the passage of the 1992 Synar Amendment (Davis and Jason 1988; Flynn et al. 1992). Readiness to prevent adolescent use of tobacco is more variable at the State and local levels (Centers for Disease Control and Prevention 1992a; Forster et al. 1992; Jason et al. 1991; Peterson et al. 1992).

Social context is important in assessing prevention readiness at the State and local levels. The degree of support for or resistance to identifying youth tobacco use as a significant social problem in the community depends largely on its social context within the community (Akers 1992). Oetting et al. (1994) have developed a model for assessing community readiness for change based on existing models for effecting change in individuals and in communities. Their model is an adaptation of the stages-of-behavior-change model (Owen et al. 1992; Prochaska et al. 1992), innovation theory (Rogers 1983) and the social action process (Beal 1964; Rogers et al. 1989; Warren 1978; Wells 1990). Stages of community readiness for prevention provide an appropriate framework for understanding prevention readiness at the community or State level (Oetting et al. 1994):

1. *Community tolerance* is present when community norms actively encourage the behavior, which is viewed as socially acceptable.
2. *Denial* is the stage in which the behavior is not usually approved of according to community norms. At this stage, people are aware that the behavior is a problem but believe that nothing needs to or can be done about the behavior at a local level.

3. *Vague awareness* is the stage in which there is a general feeling that the behavior is a local problem that requires attention. However, knowledge about the extent of the problem is sparse, there is little motivation to take action to prevent it, and there is a lack of leadership to address it.
4. In the *preplanning* stage there is a clear recognition that a problem with the behavior exists locally and that something should be done about it. At this stage, general information on the problem is available and local leaders needed to advance change are identifiable, but no real planning has occurred.
5. *Preparation* is the stage in which plans are being made to prevent the problem, leadership is active, funding is being solicited, and program pilot testing may be occurring.
6. *Initiation* is the stage in which a prevention program is under way but is still "on trial." Community members often have great enthusiasm for the effort at this stage because obstacles have not yet been encountered.
7. *Institutionalization* of prevention is when several programs are supported by local or State governments with established (but not permanent) funding. Although the program is accepted as a routine and valuable practice at this stage, there is little perceived need for change or expansion of the effort.
8. *Confirmation/expansion* is the stage in which existing programs are viewed as effective and authorities support expansion or improvement of prevention efforts. Data are routinely collected at this stage, and there is a clear understanding of the local problem and the risk factors for the problem. New programs are being planned to reach other community members at this stage.
9. In the *professionalization* stage, detailed information has been gathered about the prevalence, risk factors, and etiology of the local problem. At this point, various programs designed to reach general and specific target audiences are under way. Highly trained staff run the program and community support and involvement are strong. Also at this stage, effective evaluation is conducted to assess and modify programs.

The Future for Tobacco Control

If the recent past is an accurate base for charting future trends, there will be an acceleration of efforts to regulate and control tobacco at the Federal, State, and local levels (Bal et al. 1990; Centers for Disease Control and Prevention 1991; Coalition on Smoking OR Health 1993; Kessler 1994; Peterson et al. 1992; Pierce et al. 1993). This is particularly true for access to and use of tobacco by youth. Because of the sanctions in the Synar Amendment, any State not demonstrating progress in limiting youth access to tobacco products with sound and measurable indicators may lose some of its Federal funding for substance abuse prevention and treatment programming. This will be a strong incentive, even for States in which tobacco is a viable part of the local economy.

The future of tobacco control will primarily be affected by three factors:

- **Increasing Public Recognition of Addictive Properties of Nicotine.** With mounting scientific evidence about the consequences of tobacco use, arguments against restrictions on access to and use of tobacco will increasingly be seen as specious and obstructionist. In addition, recognition of nicotine as addictive will tend to reduce the regulatory distinction between legal and illegal drugs (Benowitz 1992; Henningfield et al. 1991; Hughes and Hatsukami 1986; McNeill 1991).
- **A Possible Reduction in the Number of People Who Smoke.** If the percentage of tobacco users continues to decline, the number of people who might resist further restrictions on smoking will be smaller and thus less powerful (although backlash by smokers, local retailers and restaurant owners, and/or the tobacco industry is possible). Several recent polls have revealed that even people who smoke favor restrictions, especially if they would prevent youth from using tobacco (National Institute on Drug Abuse 1992; U.S. Department of Health and Human Services 1994).
- **Diminishing Influence of the Tobacco Industry on the Federal, State, and Local Legislative and Executive Branches of Government.** As the perceived influence of the tobacco industry decreases, the social context for regulation and control of tobacco, especially its use by adolescents, will be more positive. In the summer of 1994, the FDA Commissioner called for movement of the regulatory control of cigarettes to the FDA (Kessler 1994). The FDA followed this pronouncement with proposed regulations on the sale, distribution, and advertising and promotion of cigarettes (21 C.F.R. Part 801 ff. 1995).

The social context for preventing or reducing the use of tobacco by adolescents has never been more positive. Unfortunately, the problem of tobacco use by adolescents is substantial (Clayton and the Ann Arbor Group 1994; Johnston et al. 1994) and daunting from many perspectives. In the next section of this chapter, a rationale for community-based programs to address this challenge is presented.

Single- and Multiple-Component Programs

Prevention programs can be designed with single or multiple components. A single-component program might be a school-based smoking prevention curriculum taught in 10 lessons during the last year of elementary school (5th or 6th grade). One benefit of such a program lies in attribution of outcomes (Johnson et al. 1990; Pentz et al. 1989b, 1989c; Perry et al. 1992). If only one prevention program was implemented in a community, then changes in behavior can be plausibly attributed to that intervention. However, multicomponent interventions obtain better results.

In most communities, programs directed toward reducing tobacco use among youth have multiple components. One example of this is a project implemented in the Midwest that had the following elements (Johnson et al. 1990):

- A 10-session, school-based, curriculum-driven program teaching resistance skills focused on all forms of drug use (including tobacco)
- Ten homework sessions involving active interviews and role playing with parents and family members
- Mass media coverage, including a total of 16 television, 10 radio, and 30 print media events broadcast over the metropolitan area
- Interventions designed to inform community policy makers about drug abuse issues and to motivate them to lead the community against drug abuse

The principal advantage of a multicomponent approach is that synchronized efforts targeting one problem are likely to be more effective in achieving the desired goals than are uncoordinated, possibly disjointed multiple efforts or single-component efforts addressing the same problem. Potential impediments to implementing multicomponent, community-based approaches to reduce the use of tobacco products by youth, however, include the following:

- First, communities vary greatly in size and diversity. The larger the community, the greater the likelihood of divergent opinions about the nature and extent of the problem of tobacco use by youth, its causes, and its relative importance, all of which need definition to determine what might be seen as the most effective ways to reduce the problem.
- Second, communities, and various segments and organizations within them, have different histories and are at different developmental stages. As noted earlier, in some communities important players in reducing tobacco use among youth may be in the tolerance or denial stage of readiness (see the stages of readiness described above). Others may be at the initiation stage of readiness. This creates difficulty in presenting a unified front in addressing the problem and in securing commitments for collective action.

Therefore, although there is general agreement that multicomponent approaches to reducing tobacco use among youth have the highest possibility of achieving success, ideally all of the key people and organizations dealing with the problem should be ready to take action to address it (Thompson et al. 1991). One important benefit of multicomponent approaches to tobacco control is affirmation of the principle that as many community elements as possible should be involved to obtain sustained changes that will result in new community norms regarding tobacco use (Thompson et al. 1991).

Summary

Community-based multicomponent approaches are essential elements of effective tobacco control. Through the active involvement of community members and organizations, such approaches are designed to promote synergy among components, change community norms and laws regarding the problem, and provide the community with the skills to address current and future health problems. Such communities can create sustained prevention programs with complementary prevention activities for youth.

Finally, a community process that involves youth in every aspect will perhaps have long-term results. Youth exposed to consistent antitobacco messages in an environment that restricts tobacco use may be less likely to try tobacco products or become addicted to nicotine as adolescents and carry that addiction into adulthood. The next chapter presents various levels of evidence supporting each of the approaches that can be implemented as part of a multicomponent community-based program to prevent tobacco use among youth.

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3 | Analysis and Recommendations

At first glance, the questions "Does prevention work?" and "Is this intervention effective?" appear to be simple queries warranting simple responses.

Determining the effectiveness of prevention approaches requires a systematic evaluation of research and practice evidence.

Deeper reflection, however, reveals that thoughtful answers to these questions are possible only after a systematic and rigorous evaluation of both the research and practice evidence. These simple questions address nothing less than the heart of the scientific method, the soundness of research and practice methodologies, and the scope of existing evidence. To help prevention practitioners and community groups choose prevention approaches that are most likely to curb adolescent tobacco use in their community, this chapter evaluates six community-based prevention approaches:

1. Economic interventions
2. Counteradvertising
3. Retailer-directed interventions
4. Multicomponent school-linked community approaches
5. Tobacco-free environment policies
6. Restriction of advertising and promotion

Organization of This Chapter

The primary goal of this chapter is to provide prevention planners with an understanding of the effectiveness of these approaches and offer practical recommendations and suggestions. To that end, this chapter has two major sections: Analysis of Evidence and Recommendations for Practice.

Analysis of Evidence

The first major section, Analysis of Evidence, presents a systematic and rigorous examination of research studies and practice cases that provide evidence for the six prevention approaches. It includes conclusions drawn from the evidence, the strength of the evidence, lessons learned from the evidence, and suggestions for future research endeavors.

The evidence has been analyzed according to a systematic protocol by a Prevention Enhancement Protocols System Expert Panel of researchers and practitioners with expertise in tobacco use prevention (see Appendices A, B, and C).

Recommendations for Practice

The second major section of this chapter builds on the knowledge base presented in the Analysis of Evidence and expands it to include the professional expertise of the Prevention Enhancement Protocols System (PEPS) Expert Panel members. It consists of their suggestions, recommendations, observations, and interpretations. These recommendations are based on the evidence presented in the first section, additional evidence not reviewed there, and the panel members' research and practice experience and opinions. The purpose of the section is to facilitate transfer of practical information from the Expert Panel to those involved in substance abuse prevention on the State, regional, and local levels.

Defining Evidence and Prevention Approaches

The term *research evidence* refers to the body of knowledge gained from research on particular topics. The basis of this information is investigations whose designs range from experimental to quasi-experimental to nonexperimental. The term *practice evidence* describes information gained from prevention practice cases, generally compiled in the form of case studies, which often include process evaluation information on program implementation and procedures.

A *prevention approach* is defined as a group of prevention activities that broadly share common methods and strategies, assumptions (theories or hypotheses), and outcomes. Two of the six prevention approaches reviewed and presented in this chapter were sufficiently broad to have identifiable subsets, each with its own emphasis or focus. These subsets of prevention approaches are referred to as *clusters.*

Organization of the Evidence Into Approaches

During the evaluation phase of developing this guideline, the research and practice evidence was grouped into six prevention approaches:

Prevention Approach 1: Economic Interventions

Increases in taxes on tobacco products are economic interventions designed to prevent the initiation, delay the start, or decrease the level of tobacco consumption by adolescents. Economic interventions include increases in Federal and State tobacco taxes.

Prevention Approach 2: Counteradvertising

Adolescents develop tobacco-related attitudes, beliefs, and behaviors as the result of influences from advertising, media, peers, and other sociocultural sources. Counteradvertising interventions are designed to change adolescents' perceived norms regarding tobacco use. These interventions involve negative messages about using and positive messages about not using tobacco, information about tobacco industry manipulation, and refusal skills. Mass media campaigns are the most common examples of counteradvertising.

Prevention Approach 3: Retailer-Directed Interventions

A primary source from which adolescents obtain tobacco products is retail tobacco outlets, such as convenience and grocery stores, service stations, and pharmacies. Interventions directed at tobacco retailers are designed to reduce access to tobacco products by adolescents at retail outlets. Interventions within this approach were classified into three clusters.

The *first cluster* relates to merchant and community education about tobacco use by adolescents and about the laws prohibiting tobacco sales to minors. Interventions in this cluster typically involve educational programs designed to teach merchants, clerks, and the general public about tobacco use by adolescents, the local laws prohibiting tobacco sales to adolescents, and the responsibility of merchants to comply with the laws.

The *second cluster* involves the enactment of laws prohibiting tobacco sales to minors. These generally involve local or State laws prohibiting the sale of tobacco products to individuals under a specific age, with penalties for merchants and clerks who violate the laws. This cluster also includes laws requiring locking devices on cigarette vending machines.

The *third cluster* consists of interventions that involve the enforcement of laws prohibiting tobacco sales to minors combined with interventions in the first cluster. Interventions in this cluster often involve purchase attempts by adolescents in cooperation with enforcement officials, followed by publicity about the results of the purchase attempts and the legal consequences to merchants. Interventions may include strengthening existing tobacco sales laws or increasing penalties for violating them. They may also include efforts designed to remind merchants and clerks of the laws, such as providing copies of the laws and warning signs in stores.

Prevention Approach 4: Multicomponent School-Linked Community Approaches

Community interventions, especially comprehensive community-based prevention programs, typically have two or more components. These components may have different target audiences, goals, and approaches. Included here is a review of multicomponent community approaches that involve school-based interventions combined with at least one of three components: parent involvement, student activism, and the media. These components were also organized into three clusters.

The *first cluster* relates to multicomponent prevention efforts that utilize parental involvement as a component of school-based programs. These efforts include parent surveys, take-home quizzes for parents and students, letters to parents, self-help materials, parent training, community organizing regarding school policy and curricula, and media campaigns.

The *second cluster* involves student activism as a component of multicomponent prevention programs. In this context, student activism means student antitobacco activities such as writing letters to movie producers and magazine editors to protest tobacco advertising, to sports figures to ask them to avoid endorsing tobacco products, and to restaurant owners to advocate smoke-free restaurants. Student activism also includes antitobacco poster contests, skits, songs, art projects, and parade floats.

The *third cluster* focuses on the use of media-based prevention components within multicomponent prevention programs. In this context, the term *media* refers to mass media (e.g., television, radio, and print), small media (e.g., newsletters and local newspapers), and other written information (e.g., pamphlets, curricula, and articles).

Prevention Approach 5: Tobacco-Free Environment Policies

Adolescents are exposed to secondhand tobacco smoke in environments that allow tobacco use. Also, adolescent tobacco users may use tobacco in environments that do not prohibit tobacco use. A tobacco-free environment policy as a prevention approach is one that restricts tobacco use in public. Intervention activities include provision of technical assistance for developing a tobacco-free environment policy, and education about existing law and policies.

Prevention Approach 6: Restriction of Advertising and Promotion

Adolescents are exposed to a deluge of protobacco influence via popular culture, mass media, and tobacco industry marketing. In particular, tobacco sponsorship of sporting and cultural events provides opportunities to promote tobacco use and to link tobacco use with sports achievements. With this in mind, the prevention approach of advertising and promotion restriction includes interventions such as threatening to protest tobacco industry-sponsored events, developing policies that prohibit

tobacco sponsorship of events, finding alternative sponsorship for events, promoting tobacco-free events, and providing tobacco-free messages within sports education.

Analysis of Evidence

This section presents the results of the Expert Panel's analysis of the research and practice evidence for each of the six prevention approaches. Each prevention approach is reviewed and presented in a standardized format that allows the reader to systematically examine them and to understand their similarities, differences, and purposes. The elements of this standardized format are described in the following paragraphs.

Intended Measurable Outcomes

Each prevention approach is accompanied by a brief statement about the intended measurable outcome—the overall expected consequence and the results of all interventions within each approach. Because intended outcomes should be quantifiable, they are described as *intended measurable outcomes.*

Conceptual Framework

Each prevention approach includes a synopsis of the philosophical basis for the approach. This is the assumed reasons or hypotheses that explain why the interventions in a specific approach should have a given effect. This section may also include a brief statement about the context of the prevention approach.

Objectives of Studies Reviewed

This section includes a partial list of the objectives of the individual research studies and practice cases that were reviewed for a prevention approach. The objectives are the specific changes expected as the result of the interventions being reviewed.

Activities of Studies Reviewed

This section includes a partial list of activities that were employed to meet the interventions' objectives. These include individual components of the interventions.

Basis of Evaluation of Evidence

This section provides a brief abstract of each research study and practice case, including the study design, where appropriate; the overall intent of the study or practice program; and selected findings or results that are most relevant to the prevention approach in question. Although the PEPS Expert Panel carefully examined the design of research studies and the process evaluation information of the practice cases, the abstracts do not include this information. Thus, these summaries are not critical analyses of study design, threats to internal validity, or program implementation. Studies that had severe deficiencies were excluded from the pool from which the recommendations were derived. The summaries of studies presented simply provide

a snapshot of the research or practice evidence. When known, the time lines or chronologies of the intervention and study are included in the abstract.

Level of Evidence

Each of the prevention approaches or clusters is followed by a shaded box titled Level of Evidence. These provide two important pieces of information. First, they describe conclusions that can be drawn from an analysis of the research and/or practice evidence for each approach (or cluster). Second, they indicate the strength of the level of evidence supporting the conclusions. The criteria for assigning the levels of evidence are as follows:

1. Strong Level of Evidence

a. Consistent, positive results of strong or medium effect from a series of studies, including:

- At least three well-executed studies of experimental or quasi-experimental design

OR

- Two well-executed research studies of experimental or quasi-experimental design

AND

- Consistent results from at least three case studies

b. The use of at least two different methodologies

c. Unambiguous time ordering of intervention and results

d. A plausible conceptual model ruling out or controlling for alternative causal paths or explanations

2. Medium Level of Evidence

a. Consistent, positive results from a series of studies, including:

- At least two well-executed studies with experimental or quasi-experimental designs

OR

- At least one well-executed study and three prevention case studies showing statistically significant or qualitatively clear effects

b. The use of at least two different methodologies

c. Unambiguous time ordering of intervention and results when so measured

d. A plausible conceptual model, whether or not competing explanations have been ruled out

3. Suggestive but Insufficient Evidence

This category is used to describe research and/or practice evidence that is based on a plausible conceptual model or on previous research and is being demonstrated in rigorous evaluation studies or appropriate intervention programs in process. One of two conditions typically causes evidence to be described as suggestive but insufficient:

a. In the first condition, the evidence, although limited, appears to support a conclusion, but additional research is needed to fully support the conclusion. This condition often applies to areas in which there has been little study, such as those that are impractical to research or new areas of study.

b. A second condition involves equivocal results. In this condition, a specific conclusion is supported in some studies but is not supported in others.

The first three categories for level of evidence provide a means to present research and practice evidence for which there are varying degrees of confirmation of positive effect.

4. Substantial Evidence of Ineffectiveness

This fourth category describes research and practice evidence that demonstrate a prevention approach is not effective. The criterion for inclusion in this category is the absence of a statistically significant effect or a statistically significant negative effect in a majority of well-executed studies, including at least two quantitative studies with sample sizes sufficient to test for the significance of the effect.

Lessons Learned From Evidence Reviewed

This section describes lessons learned and conclusions reached from the research and practice evidence reviewed for an approach. The basis of these is the research and practice evidence reviewed and summarized for an approach.

Recommendations for Future Research

Each prevention approach includes recommendations and suggestions from the Expert Panel for future research endeavors.

Information Not Included

Although this guideline reviews and evaluates many multicomponent prevention programs that include a school component, it does not examine the effectiveness of programs that are exclusively school based. Two notable federally produced documents thoroughly review school-based prevention programs for the prevention of

youth tobacco use. These are *Preventing Tobacco Use Among Young People: A Report of the Surgeon General* (Surgeon General of the United States 1994) and *Growing Up Tobacco Free: Preventing Nicotine Addiction in Children and Youths* (Institute of Medicine 1994).

Similarly, this document does not provide an exhaustive review of all types of practice programs currently in use. All research and practice evidence had to meet rigorous qualitative criteria to be included in the guideline. While more than 80 prevention programs were reviewed, many did not satisfy the criteria. For example, many practice programs did not sufficiently document process evaluation activities.

Multiple Use of Research Studies

Many tobacco prevention programs for adolescents have multiple components. As a result, a single study of a multicomponent intervention may provide evidence regarding more than one prevention approach. For example, a program that includes media-based counteradvertising components and merchant education activities may provide evidence regarding two prevention approaches: counteradvertising and retailer-directed interventions. Accordingly, some studies are used as evidence in more than one prevention approach.

Prevention Approach 1: *Economic Interventions*

Intended Measurable Outcome

To prevent the initiation, delay the onset, or decrease the level of adolescent tobacco consumption by increasing the sales tax on tobacco products

Conceptual Framework

Sensitivity to tobacco price fluctuations tends to be high among adolescents. Therefore, increasing the price of tobacco products should reduce adolescent tobacco purchases and thus reduce the initiation, delay the start, or decrease the level of tobacco consumption by adolescents. Substantial tobacco tax increases result in higher retail tobacco costs.

Objectives of Studies Reviewed

- To assess the elasticity of adolescent demand for cigarettes based on differing decreases or increases in the Federal excise tax
- To compare changes in tobacco consumption in States where there were tax increases to those in States where there were no tax increases
- To identify the likely effects of increases in cigarette excise taxes on the number of adolescent smokers

Activities of Studies Reviewed

- Increase in Federal taxes
- Increase in State taxes
- Legislative changes
- Media campaigns

Basis of Evaluation of Evidence

The following analysis of the effectiveness of economic interventions to prevent the initiation, delay the start, or decrease the level of tobacco consumption by adolescents is based on four econometric studies (Glantz 1993; Peterson et al. 1992; U.S. General Accounting Office 1989; Warner 1986).

Glantz (1993) conducted a quasi-experimental time series study to examine the effect of the California law, based on Proposition 99, that required a 25-cent tax increase on cigarettes and allocated 20 percent of the resulting revenues to a Health Education Account for a statewide tobacco education effort. The study was designed to evaluate whether the California law had an effect on tobacco consumption, tobacco pricing, and tobacco industry revenues.

Findings:

1. Enactment of Proposition 99 resulted in a tripling of the rate at which cigarette consumption had been falling.
2. Although tobacco price increases caused a drop in tobacco consumption nationwide, tobacco consumption declined faster in California than elsewhere in the United States.
3. Tobacco industry advertising in California increased by 50 percent.

The purpose of a study by Peterson et al. (1992) was to evaluate the effects of State cigarette tax increases on cigarette sales in the 50 States for the years 1955 to 1988. In this historical cohort design study, they compared changes in cigarette consumption in States during years in which there were State cigarette tax increases with consumption changes during years when there were no tax increases. They also assessed changes in cigarette consumption as a function of the size of State tax increases and compared the effects of State tax increases on cigarette consumption during three time periods: 1955 through 1964 (prior to the Surgeon General's first report on smoking), 1965 through 1978 (when per capita cigarette consumption peaked), and 1979 through 1988 (a period of declining consumption).

Findings:

1. Cigarette sales decreased by an average of three packs per capita following a tax increase.

2. Cigarette sales increased by 0.6 packs per capita with no tax increase.
3. For each 1-cent increase in cigarette taxes, cigarette sales fell by 0.75 packs per capita.

Based on findings from previously conducted research, an analysis of the economic literature on adolescent smoking by the U.S. General Accounting Office (GAO) (1989) was designed to estimate the impact of increasing the Federal cigarette excise taxes on the number of teenage smokers. The study was also designed to determine the extent and consequences of teenage smoking. The analysis was based on (1) the 1989 Surgeon General's Report; (2) the 1982 and 1985 National Household Surveys on Drug Abuse; (3) the 1987 High School Seniors Survey; (4) numerous economic studies of smoking, especially those that estimate the price responsiveness of teenagers' smoking behavior; (5) interviews with the authors of these studies; (6) interviews with officials of the National Center for Health Statistics; (7) interviews with officials of the Office of Smoking and Health at the Centers for Disease Control and Prevention; (8) information about cigarette prices published by the Tobacco Institute; and (9) a recent GAO report on Federal cigarette excise taxes.

Findings:

1. The investigators estimated that if excise taxes were raised about 20 cents per pack, the likely result would be more than 500,000 fewer smokers and 125,000 fewer premature deaths.

The goal of an econometric analysis by Warner (1986) was to determine whether changes in the Federal cigarette excise tax would affect the number of adolescents and adults who smoke cigarettes. In particular, this study estimated the potential effect of an increase or a decrease in the Federal cigarette excise tax as measured by the numbers of adolescents and adults who would be encouraged to start smoking, continue smoking, not start smoking, or stop smoking.

Findings:

1. An 8-cent tax decrease would induce 1.9 million Americans to smoke who would not do so if the tax were to remain at 16 cents—including more than 460,000 adolescents who would begin or continue smoking.
2. An 8-cent tax increase would encourage 1.8 million Americans, including more than 400,000 adolescents, to quit or not begin smoking.
3. A 16-cent tax increase would encourage nearly 3.5 million Americans, including more than 800,000 teenagers and nearly 2 million young adults aged 20 to 35 years, to quit or not begin smoking.

Level of Evidence

The research evidence reviewed indicates that laws can be established or modified to increase Federal or State taxes on tobacco products:

There is **strong evidence** that instituting tobacco tax increases is an effective approach to reduce the prevalence of adolescent tobacco use, especially when the tax is sufficiently high and is linked to the consumer price index.

Lessons Learned From Evidence Reviewed

- Tobacco tax increases are effective in reducing the prevalence of tobacco use by adolescents. Efforts to increase State taxes on tobacco products have included the mobilization of community groups, other groups, and legislators. Depending on the State, taxes can be increased through the initiative or the legislative process.
- Although tobacco tax increases will decrease the prevalence of adolescent tobacco use, other prevention activities must be utilized to sustain such decreases. Tobacco tax increases are most effective within a comprehensive, multicomponent prevention program.
- The benefits of increases in tobacco taxes, such as reduction in adolescent cigarette use, will shrink as inflation erodes the real value of the tax increase—unless the excise tax is indexed so that the nominal tax rate (expressed in cents per pack) rises in step with prices. Indexing tobacco taxes to the consumer price index or to the wholesale price of cigarettes would make permanent the public health gains of higher taxes.

Suggestions for Future Research

- When tax increases are implemented, an effort should be made to study the potential effect on youth consumption, including the establishment of baseline evaluations to accurately assess changes after implementation.
- In addition to tobacco tax increases, it would be valuable to research and develop alternative economic approaches to tobacco growing and tobacco production.

Prevention Approach 2: *Counteradvertising*

Intended Measurable Outcome

To change perceived norms among children and adolescents regarding tobacco use

Conceptual Framework

Research and experience demonstrate that adolescents develop attitudes, beliefs, and behaviors regarding tobacco use from peers, family members, television, and other cultural sources. Adolescents often have the perception that tobacco use among their peers is common and acceptable. They are also exposed to messages through advertising that links tobacco use with peer acceptability, success, and fun. Media messages promoting negative images about tobacco use, revealing the actual prevalence of tobacco use among youth, and providing information about the unacceptability of tobacco use should help to change perceived norms among adolescents about tobacco use.

Objectives of Studies Reviewed

- To increase the exposure of children and adolescents to negative messages about tobacco use or positive messages about not using tobacco
- To increase adolescents' ability to identify hidden messages in tobacco advertising and their awareness of marketing manipulation
- To change adolescents' attitudes and beliefs about tobacco use and determine the frequency and types of media messages that will be most effective in changing perceived norms
- To increase adolescents' awareness of norms regarding smoking
- To improve adolescents' tobacco refusal skills and help them develop smoking cessation skills

Activities of Studies Reviewed

- Radio and television campaigns
- Multilevel mass and small media campaigns, including billboards, posters, magazines, radio, and television
- A mass media campaign linked with youth education programs
- Prime time airing of media campaigns
- A Statewide multimedia tobacco education media campaign

Basis of Evaluation of Evidence

The analysis of the effectiveness of counteradvertising in changing perceived norms among children and adolescents regarding tobacco use is based on five research studies (Bauman et al. 1991; Flynn et al. 1992, 1994; McKenna and Williams 1993; Popham et al. 1994; Murray et al. 1994).

A study by Bauman et al. (1991) had a quasi-experimental design using cross-sectional measurements. The study's goal was to evaluate the impact of three mass-media antismoking campaigns directed at adolescents 11 to 17 months after the broadcasts ended. The first campaign involved eight 30-second radio messages that focused on

seven expected consequences of smoking related to whether young people become regular smokers. The second campaign featured a 60-second radio message that invited youth 12 to 15 years old to enter a sweepstakes. Once entered, they received brochures asking them to talk to their friends about not smoking, encourage them to pledge not to smoke, and have them enter the sweepstakes, with financial incentives for recruiting friends. The third campaign comprised a television broadcast of the sweepstakes offer and only three of the radio messages. The study was designed to assess whether the campaigns by themselves influenced subjective expected utility for smoking, smoking intention, friends' approval of smoking, friends' encouragement of not smoking, and beginning smoking.

Findings:

1. Radio and television messages reached 81 percent of the target audience an average of 4.5 times during each of the three 4-week intervention periods.
2. The media campaign had a modest effect on the expected consequences of smoking and friends' approval of smoking.
3. The radio-only campaign was as effective as television.
4. The peer involvement component was not effective.
5. The campaigns did not reduce the number of new smokers.

A study by Flynn et al. (1992) had a quasi-experimental design, with a survey follow-up. The purpose of the study was to determine whether a mass media campaign plus a school-based cigarette use prevention intervention was more effective in reducing smoking than school-based interventions alone. Another study by Flynn et al. (1994) was a 2-year follow-up.

Findings:

1. The intervention group showed a consistent trend toward less smoking, with significant differences in the final 2 years.
2. The intervention group reported significantly more negative attitudes toward tobacco use than did the control group in years two through five.
3. The effects of the intervention persisted 2 years after its completion.

In a formative evaluation, McKenna and Williams (1993) developed and tested a mass media campaign message designed to increase awareness among adolescents about the marketing tactics of the tobacco industry and to strengthen antitobacco attitudes among adolescents. This study utilized focus group discussions to plan campaigns and to test finished counteradvertising approaches and campaign materials. Although research on youth was used to prepare the messages, adolescents were not consulted during the preparation of these television spots.

Findings:

1. Few (26 percent) adolescents understood that the proposed television spot illustrated tobacco industry marketing tactics.
2. Thirty-eight percent of adolescents thought the television spot promoted smoking, few (10 percent) understood the references to the tobacco industry, and older adolescents (ages 13–15) more often than younger adolescents (ages 10-12) were able to identify the message correctly. Because the adolescents were unable to understand the campaign messages, the message was not aired.

Popham et al. (1994) evaluated the effectiveness of a 1990–1991 Tobacco Education Media Campaign conducted by the California Department of Health Services. The 15-month media campaign produced more than 50 television spots, 50 radio spots, 20 outdoor advertisements, and 40 newspaper advertisements. These were placed through numerous television stations, 69 radio stations, 775 outdoor venues, and 130 newspapers. The media campaign was targeted at school-age youth and adult smokers. The campaign was designed so that youths' exposure would be approximately one-third greater than that of adults. The themes employed included the adverse health and interpersonal consequences of tobacco use, society's increasing disapproval of smoking, and the profit motivation of the tobacco industry. In this time series, nonexperimental evaluation, precampaign baseline measurements were compared with quarterly postcampaign measurements regarding awareness of the campaign, tobacco use, smokers' intention to quit, nonsmokers' intention to start smoking, and attitudes toward smoking. The following results are limited to data derived from evaluation of 29,264 students in grades 4 through 12.

Findings:

1. Among students exposed to the media campaign, there was an increase in awareness of the media campaign, a decrease in the percentage of students who were smokers, an increase in the proportion of smokers with an intention to quit, and an increase in health-enhancing attitudes.
2. At the final measurement, students who had been exposed to the media campaign demonstrated stronger health-enhancing attitudes than did their unexposed counterparts.

In a 5-year study, Murray et al. (1994) used a time series cross-sectional survey to examine the effects of a prevention approach that included mass media messages on adolescent beliefs and behaviors. They assessed the amount of student exposure to mass-media messages on tobacco use prevention and determined whether beliefs, attitudes, and behaviors related to tobacco use changed as a result of this exposure.

Findings:

1. Students exposed to mass media campaigns reported dramatically increased exposure to antismoking messages in the mass media.
2. This exposure had little effect on smoking-related beliefs or behaviors.

Level of Evidence

The research evidence reviewed indicates that it is possible to implement counteradvertising interventions:

- There is **strong evidence** that counteradvertising is effective in changing the attitudes of adolescents about tobacco use.
- There is **medium evidence** that counteradvertising is effective in reducing adolescent tobacco use.

Lessons Learned From Evidence Reviewed

- Counteradvertising, in the form of multicomponent media-based prevention efforts, can increase young people's awareness of media campaigns, decrease their smoking, and decrease their intention to start. Such efforts have also demonstrated an ability to increase negative attitudes toward smoking, increase understanding of the consequences of smoking, and decrease rates of peers' approval of smoking.
- Multicomponent prevention efforts that include media campaigns are more effective than single-component media campaign prevention programs. Media campaigns have been shown to support and promote other components and vice versa. Effective media campaigns involve linkages with other intervention activities.
- To be effective, media messages should be age appropriate and designed with the target audience's developmental stage in mind. In particular, messages should not be too subtle or too sophisticated.

Suggestions for Future Research

- Counteradvertising as an approach to preventing adolescents' tobacco use is in the early stages of development. Additional research should be conducted with regard to motivational mechanisms. In other words, what are the elements of a media message that motivate people? What components are the most powerful? What is the appropriate execution of messages?

Prevention Approach 3: *Retailer-Directed Interventions*

Intended Measurable Outcome

To reduce access to tobacco products by minors

Clusters

Within the prevention approach of tobacco retailer-directed interventions, research and practice can be divided into three subgroups, each with its own emphasis. Consequently, tobacco retailer-directed interventions are presented here in three clusters: merchant and community education about adolescent tobacco use and the laws prohibiting tobacco sales to minors, the enactment of laws prohibiting tobacco sales to minors, and enforcement of laws prohibiting tobacco sales to minors plus merchant and community education about minors' tobacco use and the laws prohibiting tobacco sales to adolescents.

Note: In many of the studies in this section, investigators examined local ordinances prohibiting tobacco sales to minors. These studies predated the Synar regulation, which mandates that all States have laws prohibiting tobacco sales to persons 18 years and younger or risk losing substance abuse prevention and treatment block grant funding. The Synar Regulation was made final in February 1996 and is still in the implementation process.

CLUSTER 1: *Merchant and Community Education About Adolescent Tobacco Use and the Laws Prohibiting Tobacco Sales to Minors*

Conceptual Framework

Research demonstrates that adolescents obtain tobacco products through direct purchase from retailers, such as convenience and grocery stores, service stations, and pharmacies as well as through friends and family members, and shoplifting. Therefore, educating merchants, clerks, and the community about youth tobacco use and the laws prohibiting tobacco sales to minors should reduce tobacco sales to minors.

Objectives of Studies Reviewed

- To determine whether merchant education combined with grassroots community education reduces the sale of tobacco products to minors
- To determine whether positive reinforcement to clerks and merchants for not selling tobacco to minors and asking for proof of age reduces tobacco sales to minors

Activities of Studies Reviewed

- Educating clerks and merchants about the youth tobacco use problem, existing laws prohibiting tobacco sales to minors, and their responsibility for complying with these laws
- Providing information and education to the general public, community groups, and mass media about existing laws prohibiting tobacco sales to minors and about their use of tobacco
- Enlisting community support for activities related to education and interventions regarding tobacco use by youth
- Developing and publicizing the results of surveys of purchase attempts by adolescents
- Providing retail stores with warning signs regarding the laws prohibiting tobacco sales to minors

Basis of Evaluation of Evidence

The analysis of the effectiveness of Cluster 1 under Prevention Approach 3, Merchant and Community Education About Adolescent Tobacco Use and the Laws Prohibiting Tobacco Sales to Minors, is based on five research studies (Altman et al. 1989, 1991; Biglan et al. 1994a; Keay et al. 1993; Skretny et al. 1990; Wildey et al. 1995) and one prevention practice case (Tobacco-Free Youth Project).

A study by Altman et al. (1989) had a nonexperimental design with baseline, intervention, and posttest stages. It was designed to determine whether a voluntary education program for merchants, combined with a media campaign and a grassroots community organization, would be effective in reducing the sale of cigarettes to minors in a wide range of stores and communities. Six months after baseline evaluation, an intervention was implemented that involved community and merchant education, as well as contact with chief executive officers of outlet chains and franchises. The investigators later completed a 1-year follow-up study (Altman et al. 1991).

Findings:

1. After the intervention, cigarette sales to minors decreased significantly, from 74 percent at baseline to 39 percent at 6 months and 59 percent at 1 year.
2. At 6 months, vending machine sales to minors remained at 100 percent.
3. Postings of warning signs increased from 3 percent at baseline to 23 percent at 6 months and 25 percent at 1 year.
4. Stores receiving educational kits began posting warning signs more often.
5. The rate at which adolescents were asked for proof of age increased from 24 percent at baseline to 48 percent at 6 months and 34 percent at 1-year follow-up.

A study by **Biglan et al. (1994a)** was a time-series design involving several communities. This study was conducted to determine whether a community intervention designed to mobilize social and tangible reinforcement for merchants who refused to sell tobacco to minors would reduce tobacco use among adolescents. The intervention consisted of mobilization of community support, merchant education, consequences to merchants for selling tobacco to minors, publicity about merchants' refusal to sell, and feedback to merchants about the extent of their sales to adolescents.

Findings:

1. The proportion of stores willing to sell tobacco to minors after the intervention decreased from baseline as follows:
    - From 57 to 27 percent in Florence
    - From 62 to 17 percent in Reedsport
    - From 65 to 37 percent in the greater Sherwood area
    - From 63 to 22 percent in Hood River

In a quasi-experimental study, **Keay et al. (1993)** evaluated whether a combination of retail merchant education, mass media efforts, and community education would affect cigarette sales to minors. The study was also designed to evaluate, at 1 month after the intervention, whether these efforts would affect merchant behavior, such as asking apparent minors their age, requesting proof of age, asking whether cigarettes were for minors' own use, discouraging cigarette use, or encouraging cigarette use.

Findings:

1. In the outlets studied, sales to minors decreased from 70 percent to 32 percent.
2. In control outlets, sales to minors decreased from 65 to 59 percent.
3. Study outlets demonstrated significant improvement regarding asking for proof of age and discouraging cigarette use.

In an experimental study, **Wildey et al. (1995)** examined the effects of a retailer-directed education intervention to reduce tobacco sales to minors in six low-income, ethnically diverse communities. The study involved a control group and an intervention group of retailers that received three quarterly educational visits from project staff over a 1-year period. During these visits, agency staff delivered educational materials for managers, salesclerks, and customers. At the same time, the program employed community education and media strategies to encourage retailer compliance and to promote community awareness, including release of baseline adolescent purchase attempt results to media. Purchase attempts were also made immediately following the intervention and 6 months postintervention.

Findings:

1. At baseline, purchase attempts were successful in 68 percent of the retail stores.
2. Posttest purchase attempts were successful in 32 percent of the intervention stores and 59 percent of the control outlets.
3. At 6 months following the conclusion of the intervention, compliance rates for the intervention group were found to be stable, with the control group showing a slight but insignificant decline.

The purpose of a quasi-experimental study by Skretny et al. (1990) was to evaluate the effect of a merchant education and awareness intervention on compliance with the State law that prohibits tobacco sales to minors and requires posting of warning signs. The intervention involved a letter to store managers requesting them to comply with the State law regarding sales and signs and to post warning signs about tobacco sales to minors. The letter was accompanied by a tip sheet for educating store employees about the illegality of tobacco sales to minors. Adolescent purchase attempts were made 2 weeks after the intervention.

Findings:

Two weeks after the merchant education intervention:

1. Tobacco sales to minors did not significantly differ between stores receiving the mailing and others.
2. There was a statistically significant difference in the posting of warning signs between study stores (40 percent) and control stores (0 percent).

The Tobacco-Free Youth Project of the COMMIT to a Healthier Raleigh Project was designed to increase public awareness concerning cigarette sales to minors and merchants' voluntary compliance with the State law prohibiting tobacco sales to minors. The project involved cigarette purchase attempts by adolescents, media coverage of the results of the purchase attempts, and a community-wide education campaign designed to inform the public and merchants about the law and to facilitate merchant compliance with the law. After the campaign, the project evaluated the effect through adolescents' purchase attempts made on July 13, 1991, with a press conference publicizing results on July 31. In September, the merchant education program began. Purchase attempts were again made in April (vending machines only) and June (over-the-counter and vending machines).

Findings:

1. Purchase attempt rates dropped from a baseline rate of 64 percent to 32 percent after the intervention. Based on evidence derived from the baseline evaluation, the Raleigh City Council voted to ban cigarette vending machines from establishments without Alcoholic Beverage Control permits.

Level of Evidence

The research and practice evidence reviewed indicates that interventions can be designed to provide merchant and community education about adolescent tobacco use and the laws prohibiting tobacco sales to minors:

There is **medium evidence** that combined merchant and community education results in a short-term decrease in over-the-counter tobacco sales to minors.

CLUSTER 2: *Enacting Laws Prohibiting Tobacco Sales to Minors*

Conceptual Framework

Research demonstrates that adolescents obtain tobacco products through direct purchase from retailers, such as convenience and grocery stores, service stations, and pharmacies as well as through friends and family members, and shoplifting. Therefore, enacting laws prohibiting tobacco sales to minors should reduce tobacco sales to them.

Objectives of Studies Reviewed

- To determine whether enactment of laws restricting tobacco sales to minors or an increase in penalties to merchants for violating these laws would result in changed attitudes and behaviors on the part of merchants regarding sales to adolescents
- To determine whether a comprehensive ordinance restricting tobacco sales to minors would have an effect on sales to minors
- To determine whether an ordinance that mandates locking devices on cigarette machines would decrease sales from cigarette machines to minors

Activities of Studies Reviewed

- Enacting local ordinances restricting the sale of tobacco to minors
- Placing cigarette vending machines in locations inaccessible to minors
- Requiring locking devices on cigarette vending machines that require merchant or clerk assistance to permit operation
- Requiring merchant licenses for vending machines or for over-the-counter sales of tobacco products
- Requiring merchants to ask customers who appear to be underage for proof of age during tobacco purchase attempts
- Requiring warning signs in stores that remind merchants, clerks, and customers about laws restricting tobacco sales to minors
- Enacting penalties, such as license suspension or revocation or civil penalties, for violating laws restricting tobacco sales to minors

Basis of Evaluation of Evidence

The analysis of the effectiveness of Cluster 2 under Prevention Approach 3, Tobacco Retailer-Directed Interventions, Enacting Laws Prohibiting Tobacco Sales to Minors, is based on four research studies (Forster et al. 1992a, 1992b; Hinds 1992; Jason et al. 1991).

A study by Forster et al. (1992a) had a nonexperimental design with baseline, intervention, and posttest phases. The purpose of the study was to determine whether locking devices on cigarette vending machines would decrease the ability of adolescents to use them. Cigarette purchases were attempted at three points: shortly before the enactment of a law requiring locking devices, 3 months after baseline, and 1 year after baseline.

Findings:

1. Three months after the enactment of the law, 34 percent of the businesses had machines without locking devices.
2. One year after the enactment of the law, 30 percent of the businesses had vending machines without locking devices.
3. The percentage of purchases by adolescents decreased from 86 percent before the law to 30 percent at 3 months and 48 percent 1 year after implementation.
4. One year after enactment, businesses that had installed locking devices were selling fewer cigarettes to minors than were businesses with unlocked machines.
5. One year after enactment, businesses that had switched to over-the-counter were selling the fewest cigarettes to minors.

Another study by Forster et al. (1992b) had a cross-sectional multiple evaluation design. It was conducted to establish baseline data on adolescents' ability to purchase cigarettes over the counter at convenience and grocery stores, gas stations, pharmacies, and bars as well as from cigarette vending machines in these establishments. In addition, this study was designed to assess the short-term effect of a Minnesota law that increased the penalty for cigarette sales to minors from a petty misdemeanor to a gross misdemeanor. The baseline purchase attempts were made about 1 month before the enactment of the law, with a policy change evaluation about 1 month after enactment.

Findings:

1. At baseline, purchase attempts were successful at 53 percent of over-the-counter sites and were 79 percent successful at vending machines.
2. Purchase attempts were most successful at gas stations, grocery stores, and convenience stores.

3. Vending machine purchase attempts were successful at 99 percent of gas stations and 88 percent of restaurants.
4. After enactment of the law, over-the-counter purchase attempts by adolescents were 38 percent successful.
5. The enactment of the law did not result in measurable changes in vending machine purchases.

Hinds (1992) conducted a nonexperimental study with baseline, intervention, and posttest measures to determine whether a city ordinance prohibiting tobacco sales to minors had resulted in decreased access to and use of tobacco by 10th grade students. In particular, the survey assessed whether the city ordinance prohibiting tobacco sales to minors had affected regular tobacco use, the type of tobacco used, the source for obtaining tobacco, and the rate of being asked for proof of age by merchants and clerks. The baseline survey was conducted 3 months before and the post-ordinance evaluation about 10 months after enactment of the law.

Findings:

1. There was an overall reduction in subjects' tobacco use, but this finding was statistically significant only for girls.
2. There was a tendency toward less use of stores and more use of vending machines, friends, and theft to obtain tobacco, but this was statistically significant only for use of friends.
3. For tobacco-using subjects, there was an increase in being asked for proof of age when attempting to purchase tobacco.

A study by **Jason et al.** (1991) had a nonexperimental design with baseline, intervention, and posttest measurements. The purpose of the study was to determine the effect on tobacco sales to adolescents and on the incidence of their tobacco use after multiple interventions of enactment of a local ordinance, with media attention and the threat of vendor license revocation and police visits to each store; quarterly compliance checks by the police; letters from the police to cigarette vendors; and letters from the police to students' parents. Assessments were conducted in August and November 1988 and February 1989. The law was implemented in May 1989. Post-ordinance evaluations were conducted in June, August, and November 1989 and in January, April, July, and December 1990.

Findings:

Following the enactment of the ordinance:

1. Sales of cigarettes to minors dramatically declined.
2. The number of stores complying with the ordinance increased dramatically.
3. Experimental and regular use of cigarettes by minors decreased.

Level of Evidence

The research evidence reviewed indicates that laws can be written and established that increase the penalties for selling tobacco to minors:

- There is **medium evidence** that laws increasing penalties for tobacco sales to minors have a short-term effect in reducing over-the-counter tobacco sales to minors.
- There is **substantial evidence of the ineffectiveness** of enacting ordinances requiring locking devices on cigarette machines to reduce access by minors to cigarettes. Ordinances requiring locking devices are ineffective because merchants frequently leave the machines unlocked. The devices are perceived as an additional burden and are a low priority for law enforcement.

CLUSTER 3: *Enforcing Laws Prohibiting Tobacco Sales to Minors Plus Merchant and Community Education About Adolescent Tobacco Use and the Laws Prohibiting Tobacco Sales to Adolescents*

Conceptual Framework

Research demonstrates that adolescents obtain tobacco products through direct purchase from retailers, such as convenience and grocery stores, service stations, and pharmacies as well as through friends and family members, and shoplifting. Therefore, enforcing laws prohibiting tobacco sales to minors, in addition to educating merchants, clerks, and the community about these laws and about adolescents' tobacco use, should reduce tobacco sales to minors.

Objectives of Studies Reviewed

- To determine whether the combination of enforcement of laws prohibiting tobacco sales to merchants plus merchant and community education regarding adolescents' tobacco use and the laws prohibiting tobacco sales to them will decrease long-term sales of tobacco to minors
- To determine whether the addition of enforcement of existing ordinances to merchant and community education will result in a greater decrease in tobacco sales to minors

Activities of Studies Reviewed

- Seeking and securing community partnership, support, and sponsorship of prevention activities from local businesses, community organizations, local and mass media, local law enforcement, the judicial system, district attorneys, and other government agencies

- Establishing the rate of tobacco sales to minors through the use of purchase attempts by adolescents
- Visiting retail merchants to educate them about the laws prohibiting tobacco sales to minors and the consequences of noncompliance
- Combining youth with law enforcement personnel to deliver merchant education about adolescent tobacco use and the laws prohibiting tobacco sales to adolescents
- Providing merchants with educational materials about adolescents' tobacco use, fact sheets, tips for refusing sales to minors, copies of the State and local laws prohibiting tobacco sales to minors, and store warning signs about these laws
- Publicizing adolescent purchase attempts conducted by law enforcement officials that result in penalties to merchants
- Providing reinforcement to merchants for not selling tobacco to adolescents, including financial rewards, consumer product incentives, public recognition in local newspapers, and positive publicity through mass media
- Media activities such as press conferences, advertisement of activities, and coverage of activities

Basis of Evaluation of Evidence

The analysis of Cluster 3 under Prevention Approach 3, Tobacco Retailer-Directed Interventions, Enforcement of Laws Prohibiting Tobacco Sales to Minors Plus Merchant and Community Education About Adolescent Tobacco Use and the Laws Prohibiting Tobacco Sales to Adolescents, is based on two research studies (Feighery et al. 1991; Jason et al. 1991) and five prevention practice cases (Project SCAN; The Dover Youth Access to Tobacco Reduction Program; the Pajaro Valley Prevention and Student Assistance program; the Stop Tobacco Access for Minors Project (STAMP); and the Stop Teenage Addiction to Tobacco project).

A study by Feighery et al. (1991) involved a nonexperimental design with a baseline and two posttest assessments. The goal of the study was to determine whether a comprehensive educational intervention directed at merchants, law enforcement agencies, and the community, in combination with well-publicized enforcement operations by the police department, would reduce tobacco sales to minors. The pretest measurement of the sales rate was conducted between June and August 1988, the comprehensive education intervention began in September 1988, and the first posttest measurement was conducted in December 1988. A law enforcement intervention began in November 1989, and the final posttest assessment was conducted in May 1990.

Findings:

1. Comprehensive community education, in combination with police enforcement, significantly reduced over-the-counter tobacco sales to minors.
2. These efforts did not decrease sales to minors from vending machines.
3. The comprehensive community education effort alone had a limited effect on the reduction of tobacco sales to adolescents.
4. Judges often suspended the sentences of merchants.

A report by Jason et al. (1991) describes two studies with nonexperimental designs having baseline and posttest evaluations. The purpose of the studies was to determine whether a local ordinance prohibiting cigarette sales to minors had reduced the rate of cigarette sales to minors. The study also evaluated whether a local ordinance prohibiting cigarette sales to minors reduced the incidence of smoking among minors. The intervention included letters to merchants from a police officer; enactment of a local ordinance, with appropriate media coverage, vendor licensing, and visits by police to each store; quarterly purchase attempts by adolescents with police enforcement for violations; and letters from the police to students' parents. Assessments were made in August and November 1988 and February 1989. The law was implemented in May 1989. Post-implementation evaluations were conducted in June, August, and November 1989 and January, April, July, and December 1990.

Findings:

1. Cigarette sales to minors declined dramatically after enactment of the ordinance (baseline rates of 70, 60, and 79 percent; postintervention rates of 35, 36, 0, 4, and 3 percent).
2. The experimental and regular use of cigarettes by minors decreased after enactment of the ordinance.

Project SCAN (Stop Children's Addiction to Nicotine) was designed to increase public awareness of the problem of adolescents' tobacco use, increase merchant education about the tobacco access law to promote voluntary compliance, and encourage local police to enforce the tobacco access law. Two case examples describe how this project was implemented in two New York communities.

Findings:

1. Many individuals, businesses, organizations, and government agencies provided support to and sponsorship of the activities.
2. The police delivered educational information to merchants and participated in purchase attempts by adolescents.
3. Most retailers received an information packet and displayed warning signs.
4. Prevention publicity prompted police enforcement and legislative initiatives.

5. It was difficult to convince police officials to enforce tobacco access laws.
6. Judges dismissed merchant sentences imposed for violating the law.

The Dover Youth Access to Tobacco Reduction Program was developed to prevent or reduce adolescent tobacco use. Attempts by adolescents to purchase tobacco were made through the program, and merchants were invited to attend a tobacco education seminar on adolescent tobacco use and laws restricting tobacco sales to adolescents. Officials also issued warnings to merchants who violated the laws during purchase attempts by adolescents. These merchants were revisited 1 year later and were issued a court summons if they continued to sell tobacco to adolescents.

Findings:

1. The successful adolescent tobacco sales rates were 73 percent before program implementation and 24 percent after the implementation.
2. After implementation of the intervention, 60 percent of attempted purchases from vending machines by minors were successful.
3. After implementation, 16.6 percent of over-the-counter purchase attempts by minors were successful.

The Pajaro Valley Prevention and Student Assistance program was designed to create a comprehensive tobacco control program to address use of tobacco products by youth and the role of adults in supplying tobacco products to minors. Purchase attempts by adolescents were made in December 1990, the results of which enabled the passage of a vending machine ordinance in March 1991. Merchant education visits by trained youth and police were conducted in August 1991. In August 1993, program staff conducted follow-up merchant education visits. The program works in partnership with numerous community elements.

Findings:

1. Before enactment, 62 percent of over-the-counter purchase attempts and 100 percent of vending machine purchase attempts were successful.
2. Using these survey results, the county coalition introduced and passed vending machine ordinances throughout the county.
3. Three years after the program, most merchants were in compliance with the requirement to display warning signs.
4. Youth participation was constructive.
5. It was difficult to obtain youth participation on Saturday mornings.
6. The police did not perceive youth access laws as a priority and were less responsive than had been anticipated.

The Stop Tobacco Access for Minors Project (STAMP) was created to reduce adolescent tobacco sales by making access to tobacco by adolescents more difficult by

promoting public awareness of the extent of tobacco use, providing merchant education and incentives not to sell tobacco to minors, advocating and implementing tobacco access laws, and collaborating with law enforcement agencies to enforce them.

Findings:

1. Purchase attempts by adolescents demonstrated an average reduction of 40 percent in over-the-counter adolescent tobacco sales in targeted cities; in some, a 75-percent reduction.
2. STAMP has helped to enact and implement cigarette vending machine ordinances in 11 jurisdictions and more than 25 comprehensive ordinances against over-the-counter sales, vending machine sales, and free samples for adolescents as well as self-service promotional sales and displays.

The Stop Teenage Addiction to Tobacco project was designed to document the extent of youth access to tobacco, educate the community about the problem of youth access to tobacco, and advocate increased enforcement of California's youth access laws. It was also intended to advocate the passage of regulations to further reduce tobacco sales to adolescents in San Jose.

Findings:

1. As a result of publicizing purchase attempts by adolescents, merchant education, and city council lobbying, an ordinance was enacted that banned cigarette vending machines from all businesses except those serving liquor and required the latter to place the machines at least 25 feet from the entrance.
2. After enactment, publicity regarding high rates of attempted purchases from vending machines by minors led to the removal of all known illegal vending machines in San Jose.
3. Youth involvement generated media interest and public support.
4. Youth testimony helped to pass the vending machine ordinance.

Level of Evidence

The research and practice evidence reviewed indicates that it is possible to implement prevention programs that combine merchant and community education with law enforcement components:

There is **medium evidence** that combined merchant and community education with enforcement of the law will reduce over-the-counter tobacco sales to minors. Because most localities have only recently enhanced their education and enforcement efforts, there is **insufficient evidence** that this effect will be sustained over a long period of time or that this approach will reduce tobacco use among youth.

Lessons Learned From Evidence Reviewed

- Merchant education is a valuable component of community-based prevention strategies. Although merchant education as an independent component of prevention may not yield robust results, it appears to enhance the effect of other prevention components. Similarly, merchant education in the context of a multicomponent community-based prevention program helps to increase promotion of community involvement. It can help merchants to understand their role in community prevention efforts and to perceive themselves as community partners. Merchant education helps other community partners to understand the roles and responsibilities of merchants in a community partnership and diminishes the likelihood of viewing cigarette merchants as adversaries.
- A continuum of effect results from increasing the intensity of interventions; that is, the passing of a law prohibiting tobacco sales to minors without any other intervention will have the least effect. The intervention effect is optimized when there are several components, namely: enacting laws prohibiting tobacco sales to minors, enforcing these laws through publicized purchase attempts with police sponsorship or cooperation, educating merchants and the community about adolescents' tobacco use and the laws prohibiting tobacco sales to minors, seeking comprehensive community support of these prevention efforts, and educating judges and cooperating with them to impose consequences on violators of the tobacco access laws.
- Adolescents can take an active role with adults in education and prevention efforts. They can be effective as partners in educating members of the legislature, local judges, and local organizations and agencies. In particular, adolescents can work as partners with law enforcement officials during merchant education efforts.
- A decrease in sales of tobacco to youth within a given community is not necessarily indicative of decreased availability or accessibility, because they may be able to obtain tobacco in nearby communities. Such effects should be taken into consideration when evaluating community-based tobacco control research.

Suggestions for Future Research

- Merchant and community education components of prevention programs vary in effectiveness. Therefore, it is recommended that researchers explore areas related to education components, such as the ways in which educational sessions are conducted, what types of materials are most effective, and who can provide the education most effectively.
- Research and experience demonstrate that interventions differ in effects as well as durability of effects. Research is needed to examine individual prevention

components, especially those commonly used in multicomponent prevention programs.

- There is a need to examine the cost-effectiveness of specific interventions and multicomponent prevention programs.
- Research should be directed at evaluating the extent to which reducing accessibility and sales of tobacco to youth reduces their consumption of tobacco products.

Prevention Approach 4: *Multicomponent School-Linked Community Approaches*

Intended Measurable Outcome

To mobilize community systems through the schools to discourage adolescent tobacco use

Clusters

Within the prevention approach of multicomponent school-linked community approaches, research and practice can be divided into three subgroups, each with its own focus. Consequently, multicomponent school-linked community approaches are presented in three clusters: parental involvement, student antitobacco activism, and media interventions.

CLUSTER 1: *Parental Involvement*

Conceptual Framework

Research demonstrates that multicomponent programs are more effective than single-component interventions for the prevention of tobacco use by adolescents. Therefore, adding prevention components based on parental involvement to other prevention efforts, such as school-based programs, should reduce adolescents' use of tobacco.

Objectives of Studies Reviewed

- To expose parents to antitobacco messages through multiple channels
- To increase parental knowledge of tobacco problems and antitobacco attitudes and beliefs
- To increase parental awareness of, receptivity to, and participation in smoking prevention programs
- To encourage parents to discuss tobacco-related issues and problems with their children

- To help families develop rules regarding tobacco use within the home
- To determine whether adding a parent component would increase the effectiveness of school-based programs
- To enlist parents in the process of informing and influencing educators and school administrators about adolescent tobacco problems
- To design and determine the acceptability of a culturally appropriate tobacco cessation and prevention intervention
- To assist parents in fostering their children's refusal skills and to change the family norm to nonuse of tobacco

Activities of Studies Reviewed

- Parent surveys
- Take-home quizzes for parents and students
- Letters to parents
- Smoking cessation services and self-help materials
- Television segments on prevention and cessation
- Pamphlets for parents that contain information about tobacco problems
- Educational materials for parents with tips on how to encourage their kids not to smoke
- Parent training
- Community organizing regarding school policy and curricula
- Community organizing to promote community change regarding adolescents' use of alcohol, tobacco, and illicit drugs
- Media campaigns
- The "Unpuffables Program" intervention

Basis of Evaluation of Evidence

The analysis of Cluster 1 under Prevention Approach 4, Multicomponent School-Linked Community Approaches, Parental Involvement, is based on seven research studies (Biglan et al. 1994b; Flay et al. 1987; Pentz et al. 1989a, 1989b; Perry et al. 1990, 1987; Stevens et al. 1993; Werch et al. 1991) and one practice case (the Multicultural Area Health Education Center).

Biglan et al. (1994b) employed a quasi-experimental design in a year-long study of activities to prevent adolescent tobacco use aimed at adolescents and parents. Parents of middle school students were invited to participate in developing and implementing activities at school to influence parents to talk to their children about not using tobacco. Students were sent home with a quiz about tobacco to complete with their parents. The parents received a letter signed by prominent citizens regarding the quiz, along with answers and information. The students were rewarded for completion of the quiz.

Findings:

In comparison with parents in control communities:

1. Significantly more parents in intervention communities talked to their children about not using tobacco.
2. More parents in intervention communities stated that they had explicitly told their children that they did not want them to use tobacco. However, the intervention did not significantly affect how adolescents perceived parental communication, nor did it affect their intention to smoke.

A quasi-experimental study by Flay et al. (1987) was designed to evaluate the effectiveness of a school-based smoking prevention intervention for 7th grade students. Investigators examined the effects of schoolwide implementation, coordination with television programming, and encouragement of parental participation on students. This last component included television program segments that provided parents with a booklet of basic information and homework as well as encouragement by teachers to view the segments and to work with their children regarding social factors that influence children to smoke. The study included student assessments at baseline and at 2 months, 1 year, and 2 years after the intervention.

Findings:

1. Parent-child interaction during the prevention program correlated negatively with increases in intervention subjects' current and cumulative lifetime cigarette use at the first posttest assessment, but was not significant at the second and third assessments.
2. At the 1-year follow-up, parental involvement correlated negatively with the degree of adolescents' perception of peer approval of their smoking and with the number of friends they thought would approve of their smoking.
3. At the 2-year follow-up, there was a significant positive correlation between the number of parent-child activities and adolescents' intention to refuse offers of cigarettes from a group of friends and from a best friend.

Pentz et al. (1989a, 1989b) conducted a quasi-experimental study to evaluate the effectiveness of a school- and community-based program intended to counteract social pressure to use cigarettes, alcohol, and/or marijuana. The intervention included a parent organization program for training parents in parent-child communication and prevention practice support skills as well as organizing to change school policies about institutionalizing drug prevention curricula and restricting drug use in and around schools.

Findings:

1. At the time of the 2-year follow-up, on the basis of the school of origin, smoking by students in intervention schools had increased by 9.1, 9.1, and 6.8 percent for monthly, weekly, and daily periods of measurement, respectively. Student smoking rates in control schools had increased by 15.4, 13.8, and 9.8 for monthly, weekly, and daily periods, respectively. Thus, the overall rate of increase in smoking prevalence for control schools was approximately 1.5 times the rate of increase for intervention schools.

A report by Perry et al. (1990) describes two pilot evaluations. One study had a quasi-experimental design, and the other employed a nonexperimental design. These studies were designed to evaluate the effectiveness of the Unpuffables Program, a school-initiated, family-based, 4-week smoking prevention activity targeting preadolescent students and their parents. Program materials consisted of four packets designed as a family game, using a detective motif, with students receiving rewards for completion. The packets were given to the students, who were instructed to take them home and participate in the program activities with their parents. Telephone survey questionnaires were administered shortly after completion of the 4-week activity.

Findings:

Positive findings of the two studies were:

1. Increased parental awareness of the intervention program
2. Adolescents bringing the program home to parents
3. Parent-child participation in the prevention activities
4. Adolescents' initiation of conversations with their parents about smoking
5. Adolescents' encouragement of others to quit smoking

An article by Perry et al. (1987) described several investigations, including a survey component of a larger study with a quasi-experimental design. The purpose of this study was to evaluate whether a smoking prevention and cessation intervention targeted at high school students would have an effect on the beliefs and behaviors of the students' parents. The school-based curriculum intervention was a component of the Keep It Clean II program, a community intervention trial aimed at changing cardiovascular risk behaviors. A telephone survey of parents was conducted during the third year of the intervention.

Findings:

1. More parents in the intervention group (49 percent) than in the control group (35 percent) reported having discussions with their teenagers about smoking in the prior week.

2. More parents in the intervention group (72 percent) than in the control group (42 percent) were aware of the smoking prevention programs in the schools.
3. The intervention (which had no formal parental component) had a minor impact on parental attitude but heightened parental awareness of the program and its content.

A study by Stevens et al. (1993) had a quasi-experimental design and was intended to determine whether a comprehensive school-based substance abuse prevention curriculum, alone or in combination with a parenting course and a community task force, would reduce or prevent smokeless tobacco use by rural preadolescent and young adolescent 4th through 6th grade students. The parent communication course consisted of 10 sessions designed to help parents develop the personal and social skills needed to communicate with their children, especially about risky or unacceptable behavior. Student baseline questionnaires were administered in the spring of 1987, and the intervention began in the autumn of 1987. Posttest surveys were conducted in 1988, 1989, and 1990.

Findings:

1. After 3 years, there were no significant differences in rates of initiation of smokeless tobacco use among the control group, the curriculum intervention group, and the community intervention group of students.
2. More than 10 percent of boys who had been abstainers or initiators at baseline reported regular use of smokeless tobacco at the 3-year follow-up, with no significant difference between the two intervention groups.
3. The comprehensive curriculum, alone or in combination with the parent course and the community task force, did not significantly affect initial or regular use of smokeless tobacco.

Using an experimental design, Werch et al. (1991) conducted a study to determine whether a home-based social skills training program for adolescents and their parents would have an effect on adolescents' beliefs, knowledge, and intention to use drugs; on parents' beliefs and knowledge about drugs; and on the extent of parent-child communication about avoiding and resisting drugs. Fourth, fifth, and sixth grade students received four weekly take-home prevention training lessons designed to be completed with a parent. Survey questionnaires were administered to all students and parents 2 weeks before and 2 weeks after the intervention.

Findings:

1. Students in the intervention group perceived less use of alcohol, tobacco, and marijuana by peers than did students in the control group.
2. Students in the intervention group reported less susceptibility to peer pressure to experiment with cigarettes than did students in the control group.

3. Mothers in the intervention group reported more recent and more frequent communication with their children about how to refuse or avoid drugs than did mothers in the control group.
4. Mothers and fathers in the intervention group reported having more discussions about ways to resist peer pressure to use drugs than did mothers and fathers in the control group.
5. Fathers in the intervention group reported having more motivation to help their children avoid drug use than did fathers in the control group.

The Multicultural Area Health Education Center (MAHEC) project was designed to provide tobacco education and use cessation in the Latino community of East Los Angeles and the San Gabriel Valley in California. The program includes parental education about adolescents' tobacco use. The program is targeted to parents who are not reached by school-based, student-directed smoking education programs and involves classes conducted at local schools, churches, recreation centers, and health clinics.

Specific activities:

1. A tobacco cessation and prevention program with culturally sensitive staff and intervention materials designed for a Latino population
2. An adult smoking education program targeting parents who are not reached by school-based, student-directed smoking education programs to provide information about preventing adolescent use of tobacco
3. Education and prevention component targets parenting groups at schools, clinics, and church groups in the area

Level of Evidence

The research and practice evidence reviewed indicates that it is possible to implement multicomponent prevention programs that combine parental involvement components with other prevention efforts, such as school-based programs:

- There is **medium evidence** that multicomponent school-linked programs with a parental component promote improved parental knowledge about adolescent tobacco use, the development of negative attitudes by parents toward tobacco use, and the mobilization of parents to speak with their children regarding not using tobacco.
- There is **medium evidence** that these programs change students' perceptions regarding tobacco use.

CLUSTER 2: *Student Antitobacco Activism*

Conceptual Framework

Research demonstrates that multicomponent programs are more effective than single-component interventions for the prevention of tobacco use among adolescents. Therefore, adding prevention components based on student participation to other prevention efforts, such as school-based prevention programs, should reduce adolescent tobacco use. Student antitobacco activism is defined as participation in planned antitobacco student activities that are designed to raise awareness, educate, or prompt social change.

Objectives of Studies Reviewed

- To increase students' knowledge about problems associated with tobacco use
- To promote antitobacco education and to change attitudes of peers
- To teach students positive ways to encourage parents and others to quit smoking
- To create an antitobacco environment
- To teach youth how they can be influenced by tobacco industry advertising campaigns
- To determine predictors of youth participation in antitobacco programs and of tobacco use
- To prompt students to play a prominent role in developing and delivering interesting communications and activities designed for adolescents

Activities of Studies Reviewed

- Writing letters to:
  - — Members of a favorite baseball team, asking them not to use or endorse tobacco products
  - — A restaurant manager or owner, advocating smoke-free restaurants
  - — Film producers and magazine editors, protesting tobacco advertising
- Holding a poster contest
- Creating antitobacco art projects
- Making floats with an antitobacco theme and participating in community parades and festivals
- Writing and singing antitobacco songs
- Revising school policy regarding tobacco use
- Planning and attending a culturally specific youth health day
- Designing and painting an antitobacco mural at a junior high school
- Participating in the production of antitobacco animated videos, debates regarding tobacco issues, and the development of a smoking education curriculum

Basis of Evaluation of Evidence

The analysis of Cluster 2 under Prevention Approach 4, Multicomponent School-Linked Community Approaches, Student Antitobacco Activism, is based on three research studies (Biglan et al. 1994b; Edwards et al. 1992; Elder et al. 1993) and one practice case (Health Is Wealth).

A year-long study by Biglan et al. (1994b) was conducted to evaluate written media campaigns targeting adolescents and parents with messages intended to prevent adolescent tobacco use, using a quasi-experimental design. Adolescents were invited to participate in antitobacco art projects and contests, develop antitobacco posters, write and sing antitobacco songs, participate in antitobacco community events, help revise school tobacco policies, and advocate for smoke-free restaurants.

Findings:

1. Parents and adolescents in the intervention community reported significantly more exposure to antitobacco messages than did parents and adolescents in comparison communities.
2. More intervention parents than control parents reported that not smoking was the most important thing a person could do to remain healthy.
3. Adolescents exposed to the messages had a significantly lower rate of agreement with positive smoking messages than did control students.
4. Adolescents exposed to the antitobacco messages had a significantly higher rate of agreement that tobacco use is a serious societal problem than did control students.

In a cross-sectional evaluation, Edwards et al. (1992) studied 7th grade students who voluntarily participated in an antitobacco activism contest that was a component of a larger research study, Project SHOUT (Students Helping Others Understand Tobacco). The activism components included writing letters to baseball team players and restaurant owners and postcards to magazine editors and a poster contest.

Findings:

1. Student participation in activism correlated positively with high socioeconomic status and living in a suburban or rural location.
2. The highest rate of ever having used tobacco was for white boys with poor grades and friends and parents who used tobacco.
3. This activism program targets low-risk students who may be experimenting but are not smoking regularly.

Elder et al. (1993) conducted an experimental study to evaluate whether a school-based psychosocial tobacco use prevention intervention with booster interventions

would reduce tobacco use among 7th and 8th grade students. The curriculum included student participation in antitobacco community action projects, such as writing letters to tobacco companies, magazine editors, and film producers. This 3-year program included four assessments—baseline measurement at the beginning of the 7th grade and posttest evaluations on completion of grades 7 and 8.

Findings:

1. As measured at the end of the 3-year study period, the prevalence of tobacco use in the previous month was 23 percent for the control group and 14 percent for the intervention group.
2. The prevalence of smoking in the previous month was 20 percent for the control group and 13 percent for the intervention group.
3. The prevalence of smokeless tobacco use in the previous month was 5 percent for the control group and 3 percent for the intervention group.

The Health Is Wealth prevention project of Asian Health Services in Oakland, California, was designed to provide comprehensive tobacco education, use prevention, and use cessation services in the diverse Asian and Pacific Islander communities in Alameda County, California.

Specific activities:

1. Four hundred Asian and Pacific Islander youth participated in various community activities.
2. Youth participated in the development of a smoking education curriculum.
3. Youth planned for and attended an Asian Youth Health Day, and four youth worked with a muralist to design and paint an antitobacco mural at a high school.

Level of Evidence

The research and practice evidence reviewed indicates that it is possible to implement prevention programs that involve student activism:

- There is **medium evidence** that students can be mobilized to participate in antitobacco activism within schools and the community.
- There is **medium evidence** that prevention efforts that include antitobacco activism are effective in improving adolescents' knowledge about tobacco and promoting negative attitudes regarding tobacco use.
- There is **suggestive but insufficient evidence** that tobacco prevention efforts that include youth participation in antitobacco activism are effective in preventing adolescents' tobacco use, because few studies have assessed this outcome.

CLUSTER 3: *Media Interventions*

Conceptual Framework

Research demonstrates that multicomponent programs are more effective than single-component interventions for the prevention of tobacco use among adolescents. Therefore, adding media-based prevention components to other prevention efforts, such as school-based prevention programs, should reduce tobacco use by adolescents.

Objectives of Studies Reviewed

- To disseminate information about the hazards of tobacco use and the use of marketing techniques by the tobacco industry
- To counteract the influence of tobacco industry media campaigns
- To provide public recognition of antitobacco program implementors and participating students
- To assess the effects of a modular approach with written media campaigns directed toward adolescents and their parents
- To increase negative parental attitudes regarding tobacco use by adolescents
- To provide adolescents with knowledge and skills to resist peer, family, and media influence to use tobacco
- To determine the ability of media-based intervention to enhance the effects of a school-based prevention program

Activities of Studies Reviewed

- Mass media events and programs, such as press conferences
- Television-based 5-minute smoking prevention segments coordinated with classroom curricula
- Curricula and other written information for students, teachers, and parents
- Mass media antitobacco advertisements and public service announcements
- News clips, commercials, talk shows, and articles

Basis of Evaluation of Evidence

The analysis of Cluster 3 under Prevention Approach 4, Multicomponent School-Linked Community Approaches, The Media, is based on four research studies (Biglan et al. 1994b; Flay et al. 1987; Flynn et al. 1992, 1994; Pentz et al. 1989a, 1989b).

A year-long study by Biglan et al. (1994b) utilized a quasi-experimental design. Targeted toward adolescents and parents, it was conducted to evaluate written media campaigns with messages intended to prevent tobacco use by adolescents. Middle and high school students were invited to participate in a written media campaign to influence young people not to use tobacco. Parents of middle school students were

invited to participate in developing and executing written media messages to influence parents to talk to their children about not using tobacco.

Findings:

1. Significantly more parents in intervention than in control communities talked to their children about not using tobacco.
2. More parents in intervention than in control communities stated that they had explicitly told their children they did not want them to use tobacco.
3. The intervention had no significant effect on the adolescents' talking with their parents about smoking or on adolescents' intention to smoke.

A study by Flay et al. (1987) had a quasi-experimental design and was developed to determine the effectiveness of a school-based smoking prevention intervention for 7th grade students by examining the effects of its school-wide implementation, its coordination with television programming, and encouragement of parental participation on students' participation and on their tobacco use. A television station provided schools with prevention curricula for teachers and peer leaders. They provided homework booklets for students and parents. The television station aired 5-minute smoking prevention segments each weekday evening during the same week that the classroom curriculum was implemented. The study included student assessments at baseline and at 2 months, 1 year, and 2 years after the intervention.

Findings:

1. Significantly more students in the intervention group than in the control group had watched at least one television prevention segment.
2. Seventy-seven percent of the students who viewed the segments had persuaded others to view them and/or to participate in other program-related activities.
3. A significant association was found between the number of segments viewed by an intervention student and lifetime cigarette use: the more segments viewed, the lower the increase in lifetime cigarette use.

Flynn et al. (1992) conducted a study to determine whether a combination of mass media and school-based cigarette use prevention efforts was more effective in reducing smoking among adolescents than school-based prevention efforts alone. A 1994 study by Flynn et al. was a 2-year follow-up. Both studies used quasi-experimental designs.

Findings:

1. There was a consistent trend toward less smoking in the intervention group, with significant differences in the final 2 years.
2. The impact of the interventions on the targeted mediating variables was similar for each measure.

3. In years 2 through 5, the intervention group reported significantly more negative attitudes toward tobacco use.

Pentz et al. (1989a, 1989b) sought to measure the effectiveness of a school- and community-based program intended to counteract social influences to use cigarettes, alcohol, and marijuana. The study had a quasi-experimental design. The intervention comprised 39 mass-media events and programs as well as news clips, commercials, talk shows, press conferences, and articles. Consultants provided assistance in the development of scripts and program content as well as holding a prevention overview meeting with the nine major television station managers in the Kansas City area.

Findings:

At the time of the 2-year follow-up, on the basis of the school of origin, student smoking in intervention schools had increased 9.1, 9.1, and 6.8 percent for monthly, weekly, and daily periods, respectively. Student smoking rates in control schools had increased 15.4, 13.8, and 9.8 percent for monthly, weekly, and daily measurement periods, respectively. Thus, the overall rate of increase in smoking prevalence for control schools was approximately 1.5 times the rate of increase among intervention schools.

Level of Evidence

The research evidence reviewed indicates that it is possible to develop adolescent tobacco use prevention programs utilizing media components in combination with other prevention efforts (e.g., school-based programs):

- There is **medium evidence** that exposure to media-based antitobacco interventions in concert with school-based tobacco education can change students' knowledge, attitudes, and beliefs about tobacco use and marketing.
- There is **medium evidence** suggesting that multicomponent prevention programs that include media-based interventions are effective in preventing tobacco use by adolescents.

Lessons Learned From Evidence Reviewed

- Programs designed to enhance the effectiveness of school-based curricula result in increased family and student attention to antitobacco messages. However, there is limited evidence that these programs reduce tobacco use among youth.
- The effects of a fully implemented school- and community-based intervention (including parental involvement) to reduce tobacco use by adolescents as

part of a broader substance abuse prevention strategy may be limited by the community's view of tobacco use as a minor issue in relation to other forms of substance abuse and the likelihood that addressing adolescent tobacco use will not be considered a priority by the community.

- The effectiveness of multicomponent prevention programs may be multiplicative, that is, the net effect of a program may be greater than the sum of the effects of all its components. The ways in which prevention program components interact with each other and their effects on each other are largely unknown. As a result, it may not be feasible to assess the contribution of each component.
- Students who voluntarily participate in school-based antitobacco activism projects may already be at low risk for using tobacco.

Suggestions for Future Research

- There is a need to evaluate the effectiveness of multicomponent media and school-based programs in communities with sizeable ethnic and cultural populations.
- Further research is needed to determine the value of a modular approach to conducting media campaigns in community interventions.
- Community antitobacco activism may have an important role in promoting antitobacco attitudes and in counteracting messages from the tobacco industry. Further, antitobacco activism may help to support other elements of a multicomponent prevention program. However, the value of antitobacco activism as an approach requires further study.
- Many prevention practitioners support peer activism as an integral component of a comprehensive prevention strategy. Several States have a Teen Institute for substance abuse prevention, and numerous community activities involve youth as antitobacco activists. Additional information is needed about the tobacco use of adolescents who volunteer to participate in antitobacco activism.
- The ability of parents to influence the substance use choices of their children is strongly suggested by practice evidence and, to a lesser degree, by research. However, there are barriers to the successful implementation of these influences, including parental substance use and addiction, tobacco industry messages, and the selection of user-friendly mediums for the intended messages. Additional research should focus on techniques for engaging parents in the antitobacco crusade, including smoking cessation opportunities for parents who smoke.
- Research suggests that in situations involving a required class assignment for which there are contingencies for completion, studies using parental self-reporting indicate that parents talk to their children about not using tobacco.

However, under these circumstances, children's self-reports provide less evidence that their parents talk to them about not smoking. In other words, in these situations, parents perceive that they talk to their children about not using tobacco, but their children do not necessarily share that perception. Additional research is required to determine whether school-based interventions with parent-child components are effective, and if so, how best to implement them.

Prevention Approach 5: *Tobacco-Free Environment Policies*

Intended Measurable Outcome

To create environments that do not expose youth to the use and possession of tobacco

Conceptual Framework

Research demonstrates that tobacco use and exposure to secondhand tobacco smoke are threats to health. Therefore, policies restricting the use of tobacco in environments such as schools should reduce adolescents' exposure to tobacco and places where they can use tobacco and thus reduce the health risks associated with tobacco use and secondhand smoke. The Goals 2000: Pro-Children Act of 1994 (P.L. 103–227) established a nonsmoking policy at sites housing such children's services as health care, day care, education, or library services. The studies evaluated in this section preceded the enactment of this Federal law. Nevertheless, the following studies provide useful information regarding the development and implementation of policies that restrict tobacco use.

Objectives of Studies Reviewed

- To develop and implement policies restricting or prohibiting tobacco use by adolescents and adults in recreational, school, and workplace settings
- To evaluate the effectiveness of policies restricting tobacco use on rates of adolescent smoking
- To provide information and services that will assist individuals in developing and complying with policies restricting tobacco use

Activities of Studies Reviewed

- Reviewing existing laws and compliance with laws restricting tobacco use in certain settings
- Reviewing the effects of school antismoking policies on adolescent smoking
- Providing technical assistance and guidance designed to develop and implement tobacco-free policies and environments

- Providing education and information regarding existing laws restricting tobacco use in certain settings

Basis of Evaluation of Evidence

The analysis of the effectiveness of tobacco-free environment policies is based on two research studies (Nelson et al. 1993; Pentz et al. 1989c) and one practice case (the Colorado Tobacco-Free Schools and Communities Project).

A study by Nelson et al. (1993) was a cross-sectional national survey of more than 2,000 directors of licensed child day care centers and was designed to determine the prevalence of employee smoking restriction policies, the rate of compliance with State and local employee smoking regulations and State clean-indoor-air laws, and the extent of exposure to environmental tobacco smoke in these settings.

Findings:

1. Forty States regulate smoking in child day care centers.
2. More than 99 percent of the centers had an employee smoking policy that complied with applicable State or local laws.
3. Seventy-two percent of the centers had a written employee smoking restriction policy.
4. Fifty-five percent of the centers had an employee policy prohibiting smoking indoors and outdoors.
5. Twenty-six percent of the centers had an employee policy restricting indoor smoking only.

A cross-sectional study by Pentz et al. (1989c) was conducted to evaluate the effects of antismoking school policies on adolescent smoking through separate surveys for students and school staff. The student survey concerned the amount and prevalence of cigarette smoking, related attitudes and behaviors, and demographic characteristics of more than 4,800 students in 23 California schools. Surveys of school clerks and of science and health education teachers and principals concerned staff and student smoking policies.

Findings:

1. Schools with all four policy components (comprehensiveness, prevention, cessation, and punishment) had a lower smoking prevalence and a lower mean amount of smoking per individual than did schools with fewer components.
2. A high emphasis on prevention and a low emphasis on cessation were associated with a lower amount of smoking in the past week and in the past 24 hours.
3. A high emphasis on prevention correlated with a lower weekly smoking prevalence and a decrease in past-year smoking violations.

4. Neither the provision for punishment nor its severity for smoking had an effect on reported smoking rates.

The Colorado Tobacco-Free Schools and Communities Project was established in 1988 to help Colorado school districts establish policies to prohibit the use of any tobacco products in school, on school grounds, and at school-sponsored activities by students, staff, or visitors. These efforts included workshops, organizations, and written information.

Specific activities:

1. A large assortment of materials were developed to help schools develop no-tobacco policies.
2. By 1993, 48 percent of the State's school districts had a comprehensive no-tobacco policy, compared with 5 percent before the project.
3. In 1992, only 9 percent of the school districts had designated smoking areas for teachers and staff, compared with 64 percent in 1988.
4. In 1994, State legislation was passed requiring all public kindergarten through 12, Head Start, and nursery schools to be tobacco free.

Level of Evidence

The research and practice evidence reviewed indicates that it is possible to implement policies restricting tobacco use in schools and child day care centers:

There is **medium evidence** that it is possible to persuade organizations to develop policies restricting tobacco use, possession, and exposure for adolescents and adults. Because changes in policy regarding smoking are relatively recent, however, there is **insufficient evidence** to determine the effect of these changes on adolescents' tobacco use.

Lessons Learned From Evidence Reviewed

- Smoking regulations can be established through a variety of mechanisms, including State and local laws and policies at businesses, schools, and child care centers. A comprehensive policy can decrease prevalence, especially when the emphasis is on prevention and cessation.
- Harsh penalties for the possession of tobacco products by minors, such as suspension from school, may be ineffective interventions for enhancing the enforcement of antismoking regulations or for preventing or decreasing adolescent tobacco use. Programs that do not emphasize punitive penalties, especially those that provide prevention or cessation services such as tobacco education courses, tobacco cessation programs, or diversion alternatives, may be most effective.

Suggestions for Future Research

- Policy changes are part of many multicomponent tobacco prevention efforts. As a result, it can be difficult to determine what effect nonsmoking policies have on the prevalence of adolescent tobacco use. Therefore, research is recommended to examine the effect of policies regulating tobacco use on the prevalence of adolescent tobacco use.
- Furthermore, researchers should study the effects of the severity of penalties on adolescent smoking, as well as the effects of alternative penalties and approaches such as diversion.
- Researchers should determine the extent of compliance with existing smoking policies in all environments.

Prevention Approach 6: *Restriction of Advertising and Promotion*

Intended Measurable Outcome

To decrease exposure of children to tobacco promotion and pro-tobacco influences

Conceptual Framework

Research demonstrates that tobacco company sales promotions are reaching adolescents and that may put them at greater risk for smoking. Therefore, the reduction of youth exposure to particular types of marketing or to the quantity of marketing should reduce adolescent smoking.

Objectives of Studies Reviewed

To eliminate tobacco industry sponsorship of sporting and cultural events and to provide alternative sponsorship

Activities of Studies Reviewed

Providing media advocacy and the threat of adverse publicity through protesting of events sponsored by the tobacco industry:

- Assisting event promoters with obtaining alternative funding
- Developing policies to ban tobacco industry sponsorship of sporting and cultural events
- Promoting tobacco-free events
- Developing tobacco-free messages for sports education curricula
- Advertising tobacco-free events
- Disseminating tobacco-free messages through promotional materials

Basis of Evaluation of Evidence

The analysis of the effectiveness of advertising and promotion restriction interventions is based on four prevention practice cases (the Coalition for a Tobacco-Free Monterey County [Monterey Blues Festival], the Ski Tobacco-Free Project, the Tobacco-Free Soccer League Initiative, and the Coalition Against Uptown Cigarettes).

The Coalition for a Tobacco-Free Monterey County announced through a press conference that it would protest the then-named Benson and Hedges Monterey Blues Festival because the festival received tobacco industry funds. The announcement was intended to influence the festival's Board of Directors to seek alternative sponsorship. Completely eliminating tobacco sponsorship from this event took approximately 1 year.

Findings:

1. Adverse publicity through the press conference and the threat of protesting the festival led to negotiations that resulted in the festival producer's agreement that tobacco sponsorship would no longer be accepted if the protest were canceled.
2. The festival now has a written policy prohibiting acceptance of money from the tobacco industry.
3. Alternative funding has been sought.

The Ski Tobacco-Free Project (STFP), an activity of the Kirkwood Ski Education Foundation, was designed to counter tobacco industry promotion of skiing events by linking strong antitobacco messages with athletic excellence and to provide alternative sponsorship for ski events, collaborate with the U.S. Ski Association and the Kirkwood Ski Resort's marketing department in the development of an antitobacco campaign, implement an educational program for youth and their parents, and work with statewide media campaigns in the promotion of the project in newspapers and sports-related magazines. STFP has been funded since 1992. When the funding period ends, Kirkwood will sustain the program activities.

Findings:

1. STFP influenced the Kirkwood Ski Resort to develop a tougher tobacco control policy.
2. The Kirkwood Ski Resort sought out and now receives support from ski equipment manufacturers as an alternative to tobacco industry sponsorship of ski events.
3. All amateur skiers in Northern California have been exposed to tobacco-free messages through the sponsorship of local ski events.
4. The U.S. Ski Association has implemented a policy at the national level that bans tobacco industry sponsorship of any Association events.

The Tobacco-Free Soccer League Initiative was designed to help youth soccer leagues enact no-smoking policies, to educate youth soccer players about the harmful effects of tobacco, and to provide cessation referrals to coaches, parents, players, and other adult leaders. The initiative was funded in 1992. (No information was available on the length of the funding period.)

Findings:

1. Three California youth soccer leagues with more than 5,000 players have enacted no-smoking policies.
2. The tobacco-free soccer message has reached more than 4,000 people who attend the leagues' annual soccer shows.
3. The project has received numerous requests from other leagues for technical assistance in establishing no-smoking policies.

The Coalition Against Uptown Cigarettes was a group of approximately 125 individuals representing 40 organizations, led by prominent Philadelphia African Americans, organized to protest the introduction of the Uptown brand of cigarettes. R.J. Reynolds had planned to test market the mentholated cigarette in Philadelphia among African Americans. In a 30-day campaign, the coalition focused on media relations and community mobilization with the goal of getting African American smokers to refuse to participate in the planned 6-month market test. After R.J. Reynolds decided not to promote the new cigarette, the coalition became a permanent entity, the Uptown Coalition for Tobacco Control and Public Health.

Findings:

1. R.J. Reynolds decided not to test market Uptown cigarettes in Philadelphia.
2. R.J. Reynolds decided not to produce Uptown cigarettes at all.
3. The ad hoc Coalition Against Uptown Cigarettes was transformed into a permanent organization.

Level of Evidence

The practice evidence reviewed indicates that it is possible to implement efforts designed to eliminate tobacco sponsorship of events, to block tobacco product promotion, and to provide nontobacco industry sponsorship of events:

- There is **strong evidence** that such efforts can establish policies that ban tobacco industry sponsorship of social and cultural events and influence product promotion practices.
- There is **medium evidence** that policies banning tobacco industry promotion of activities such as music festivals and sporting events will reduce adolescents' exposure to tobacco industry messages.

Lessons Learned From Evidence Reviewed

- Alternative funding is an essential component for interventions that are designed to prohibit tobacco industry sponsorship of an event. In particular, practitioners and community groups can develop lists of potential alternative sponsors for event promoters and help promoters seek alternative sponsorship. For example, local businesses that are not currently involved in sponsoring the event can be approached.

  The establishment of working relationships with local businesses can lead them to view sponsorship of events as part of their civic responsibility and as part of a community partnership process. In addition, current sponsors may be willing to increase their level of sponsorship to cover the loss of tobacco industry sponsorship. They may also recommend other potential sponsors, perhaps some of their business partners.

Suggestions for Future Research

Although advertising restriction interventions are promising approaches for eliminating sponsorship of events by the tobacco industry, research is needed to answer questions such as the following:

- What conditions and program elements made the interventions successful? Was there a specific combination of elements that made the events successful? Did these interventions result in a decrease in adolescents' tobacco use?
- At tobacco-free events, what specific marketing approaches are successful in linking athletic excellence and tobacco-free sports? What are the possible unintended results of such advertising?
- Who are the key decisionmakers at organizations who should be approached to promote policy changes? Should they be frontline workers, public relations staff, or members of boards of directors?
- What specific content of policies is vital to their implementation?
- What are effective methods of finding alternatives to tobacco funding?
- What are the effects of tobacco-related paraphernalia and tobacco advertising billboards?
- What is the effect of tobacco advertising in magazines that are read by adolescents? How will these effects be influenced by the FDA final rule?

■ ■ ■

Recommendations for Practice

This section presents the Expert Panel's recommendations, suggestions, and observations regarding the prevention approaches evaluated in the preceding section. Recommendations are given for each of the six prevention approaches as well as for general activities that apply to more than one prevention approach.

Types of Recommendations

The recommendations that follow vary considerably in nature and intent. Some are practical suggestions for the optimal implementation of a particular intervention, whereas others suggest techniques and precautions to avoid problems. A few are practical observations as to what to expect during certain prevention activities. Still others interpret research findings or illustrate the practical context of prevention efforts. Some recommendations reflect expert opinions of the panel members, such as the assumptions and hypotheses behind certain prevention activities. Many represent "best practices" among prevention experts.

Some recommendations relate to the design and implementation of prevention interventions, a comprehensive discussion of which is presented in Chapter 4.

Basis of Recommendations

These recommendations are based on the research and practice evidence reviewed in the Analysis of Evidence section as well as other evidence not described there and the professional experience and opinions of the Expert Panel members. This section is illustrative of information transfer from prevention research and practice experts to prevention decisionmakers who need practical information, such as State and local prevention authorities, prevention practitioners and researchers, and members of community prevention organizations. Many of the recommendations are derived from the experience of Expert Panel members during their involvement in research or practice activities not described in this chapter and have not been evaluated in research studies.

Recommendations for Prevention Approach 1: Economic Interventions

The Expert Panels' recommendations regarding economic interventions focus on allocation of revenues, policy, and media efforts.

- Laws creating tobacco tax increases can include an allocation of resulting revenues for community health education, tobacco use prevention and cessation programs for all ages, and tobacco-related prevention and disease research.
- Experience suggests that there will be strong lobbying from the tobacco industry to decrease the amount of suggested tobacco taxes. As a result, some prevention groups have lobbied for, and others may lobby for, the highest tax possible.
- Experience also suggests that there will be aggressive advertising by the tobacco industry against tobacco tax increases. An aggressive mass media campaign should therefore be an integral component of prevention efforts, with sustained and intense media interaction, providing the media with such information as the names of community prevention partners and announcements of

newsworthy activities. Results of purchase attempts by adolescents locally and regionally can be provided for media coverage. In addition, the media can be given information about tobacco industry efforts, strengthened through the use of scientific data or quotes from authoritative organizations such as the American Cancer Society.

Recommendations for Prevention Approach 2: Counteradvertising

The Expert Panels' recommendations regarding counteradvertising focus on youth participation, media messages, and sustained efforts:

- Adolescents can help adults understand the beliefs, attitudes, perspectives, and opinions of young people. They can be motivated to participate in efforts to prevent tobacco use by adolescents. Therefore, youth can have a valuable role in the planning and development of counteradvertising programs.
- Providing too much information at one time can weaken a mass media campaign. Media campaigns should have simple and focused messages that can be understood by the target audience.
- Adolescents can play an important role in the formative evaluation of potential prevention approaches. Media approaches, especially counteradvertising, should be evaluated by adolescents prior to implementation, such as through focus groups and surveys. Indeed, one study noted that the goals and aims of one media-based prevention effort were not understood by the youths at whom it was directed.
- When possible, mass media campaigns should include television, radio, billboards, and print media. Radio, however, may be the most cost-effective approach.
- The studies by Glantz (1993) and Popham et al. (1994), of the effect of a 1990–1991 tobacco education media campaign conducted by the California Department of Health Services suggest that a statewide multimedia antismoking campaign has a role in decreasing cigarette use. Proposition 99 included a 25-cent cigarette tax increase and a media campaign involving paid advertising to promote media messages; a full range of communication approaches, including public and community relations; and mass media messages targeting the general public and cultural groups such as African Americans, Hispanics, Vietnamese, Koreans, Japanese, and Chinese. The enactment of Proposition 99 resulted in a tripling of the rate at which cigarette consumption had been falling. Students demonstrated an increase in awareness of the media campaign, a decrease in the percentage who were smokers, an increase in the proportion of smokers intending to quit, and an increase in health-enhancing attitudes. Campaign-exposed students demonstrated stronger health-enhancing attitudes than did their nonexposed counterparts. Since the media

campaign was suspended as a result of efforts by the tobacco industry, such studies demonstrate the need to continue to counter tobacco industry influence.

- Because tobacco use norms are changing rapidly and new generations of adolescents will view tobacco use differently, media approaches should constantly be modified and tailored to encourage antitobacco attitudes and nontobacco use as the norm among new generations of youth.

Recommendations for Prevention Approach 3: Retailer-Directed Interventions

The Expert Panels' recommendations regarding retailer-directed interventions emphasize community readiness for change and improving the effectiveness of prevention efforts:

- It is important to document the magnitude of the problem of youth access to tobacco in one's community. Providing profiles and descriptions of the local community increases awareness of adolescent tobacco use problems. Also, such documentation can stimulate community interest in taking action.
- Communities differ in their readiness for prevention efforts, especially those that involve community organizing. Some communities seem primed for establishing comprehensive prevention efforts, whereas others do not recognize tobacco use by adolescents as a major concern. Thus, analysis of community readiness must precede attempts to engage reluctant communities in prevention efforts.

  Those who assess community readiness should also assess the readiness of organizations that apply as lead agencies for prevention projects. In some communities, lead agencies, such as hospitals, schools, and substance abuse agencies, may be reluctant to engage in controversial activities such as compliance checks, even when their contract mandates them. Community readiness for prevention efforts can be increased by first obtaining the support of community leaders for education efforts. Obtaining local community support helps to set the stage for more aggressive action, if necessary.
- Adolescents' access to tobacco is not limited to direct purchase at stores, but includes purchase, receipt, or theft from adults and peers, theft from stores, and receipt of free samples in cigarette giveaways. Therefore, researchers and practitioners should consider means of access other than stores.
- Research and experience suggest that prevention issues and messages should be appropriate for the community. Local and small media therefore should be primary components of all prevention efforts. These can include local print, radio, and television media, when available, as well as newsletters of agencies and organizations.

- Research and experience also demonstrate that adolescents have nearly unrestricted access to tobacco vending machines, despite laws prohibiting tobacco sales to minors. Similarly, research and experience demonstrate that locking devices on tobacco vending machines are ineffective in practice because compliance with the operating procedure is low. Although the FDA final rule includes restrictions on vending machines, communities can apply for waivers to develop even more restrictive laws.
- Prevention efforts should be part of a sustained process, not discrete and isolated events. In addition, it is important to show that the prevention process is effective. Therefore, interventions such as purchase attempts by adolescents, should be regularly scheduled and their results heavily publicized. Interventions should be continually assessed and improved. The community partnership should be continually strengthened with new members, and community education should be ongoing.
- One aspect of an effective approach for enforcing laws prohibiting tobacco sales to minors is the enactment and enforcement of licensure of retail tobacco outlets. In this way, only stores with tobacco licenses can sell tobacco. Furthermore, violation of the tobacco access laws can result in suspension or revocation of the tobacco license. This creates an incentive for the merchant to comply with the law. Some States use their alcohol licensing law as the model for their tobacco licensing law. However, the wording of the alcohol licensing law should be carefully examined. The law may contain language that hampers enforcement (e.g., "knowingly sell") or ban the use of minors for compliance checks.
- Even where there is a comprehensive prevention program, violators of the tobacco access laws are often not disciplined, fined, or sentenced. Judges report that they are reluctant to impose the legal consequences because they view the crimes as minor and do not want the merchants to have criminal records. This is especially true in small cities. Therefore, because the judicial system is an important link in a comprehensive prevention program, judges should be approached and included as members of community partnerships. This can be particularly important when law enforcement partners are active. The police may become reluctant to pursue further efforts if they see that judges are throwing the cases out of court.
- Prevention programs should include incentives to clerks and merchants for not selling tobacco to adolescents, asking for proof of age, and obeying other aspects of the law. Such incentives might include local media publicity and rewards, such as free dinners or products donated by local restaurants and merchants.

Recommendations for Prevention Approach 4: Multicomponent School-Linked Community Approaches

The Expert Panels' recommendations regarding multicomponent school-linked community approaches focus on improving the impact of mass media interventions:

- The impact of mass media interventions on adolescents is more likely when the interventions:
  - — Are linked with other program channels, such as schools, parent groups, and newsletters
  - — Share common objectives with school programs
  - — Are of sufficient duration
  - — Use multiple channels
  - — Are presented where and when adolescents report their highest use of media
  - — Use a variety of message styles
  - — Appeal to age- and gender-specific motives that have been determined through formative research
  - — Use messages portraying perceived social support with age- and gender-relevant models providing appropriate behavioral skills, alternatives, and reinforcement
  - — Include media-based antitobacco information that can reach students within schools and communities. Programs that use media approaches should be prepared to measure the extent to which the target audience is exposed to the message.
- Visual rather than written intervention materials may be more appropriate and effective for groups with low literacy rates, especially adult Asian and Pacific Islander immigrants, refugees, and certain high-risk youth.

Recommendations for Prevention Approach 5: Tobacco-Free Environment Policies

The Expert Panels' recommendations regarding tobacco-free environmental policies focus on the target of policies and community support:

- Policies restricting smoking that are selectively applied may be ineffective and may send a mixed message. For instance, a school-based policy that enforces the legal ban on tobacco use by students, but allows the legal use by teachers and staff, sends the message that tobacco use among adults is acceptable. Therefore, a smoking policy should be designed for all groups across the board. For instance, one policy should be enforced for students, teachers, staff, and visitors at all school-related functions, not merely on school grounds.
- When a nonsmoking policy is established without local support, compliance and enforcement may be problematic. Therefore, efforts to establish a non-

smoking policy should utilize a grassroots approach involving the community and youth in its planning, development, and implementation. Nearly all States are funded through either the National Cancer Institute's ASSIST (American Stop Smoking Intervention Study) program or the Centers for Disease Control and Prevention's IMPACT (Initiatives to Mobilize for the Prevention and Control of Tobacco Use) program to establish and implement such grassroots approaches.

- Prior to taking steps to establish tobacco-free environmental policies, it is recommended to research and identify policies that already exist, such as the Goals 2000: Pro-Children Act of 1994 (P.L. 103–227), which established a nonsmoking policy at sites housing such children's services as health care, day care, education, or library services.

Recommendations for Prevention Approach 6: Restriction of Advertising and Promotion

The Expert Panels' recommendations regarding advertising and promotion restriction interventions focus on community partnerships and integration of messages:

- It is recommended that practitioners and even community groups not attempt to conduct these types of interventions in isolation. Rather, they should work in close partnership with community leaders, grassroots organizations, and members of the community. Aggressive attempts should be made to obtain acceptance of the interventions by community members and policymakers. Perhaps the most serious mistake is appearing to dictate how things will be done in the community. Cooperation on all levels is necessary.
- An important lesson learned from multicomponent prevention programs is that the components of such a program should be complementary elements with the same overall goal and philosophy. When no-tobacco or antitobacco messages are incorporated into event activities, they should be integrated with existing activities, messages, and promotions. They should not be merely add-on messages but should support other activities.
- The adaptation of these promising interventions to other social settings depends on a number of variables, such as the readiness of the community for such activities, the geographic area, and social and cultural support for prevention of tobacco use by adolescents.

Community-Based Approaches: General Recommendations

Most of the panel's recommendations regarding prevention intervention research and practice are specific for a prevention approach. Several recommendations, however, are applicable to most community-based interventions designed to prevent tobacco use by adolescents.

Use Integrated Multicomponent Interventions. Community-wide antitobacco campaigns can promote antitobacco attitudes and behaviors among adolescents and their parents and can significantly reduce the rate of tobacco use by adolescents, especially if multiple prevention components are used. Indeed, research demonstrates that multicomponent community interventions are more effective than single interventions. On the practice side, it is recommended that practitioners utilize multicomponent interventions that involve the community and its organizations and agencies, its schools, and the media. Moreover, the elements of a multicomponent intervention should be integrated and should support and enhance each other. The scientific method emphasizes the importance of identifying intervention components that produce significant positive effects. On the research side, therefore, it is recommended that researchers investigate the effectiveness of individual intervention components.

Link Programs With Existing Activities. Communication should be established with programs and activities that are currently active with youth, especially high-risk youth. It is also important to identify individuals and organizations that are involved in adolescent health risk reduction, especially those related to substance use, as well as substance abuse prevention programs for adults. Similarly, linkages should be established with community social, cultural, and religious agencies and institutions, especially those that provide social services to the target audience or its family members.

Communication and collaboration with such community partners has several benefits: prevention activities become part of an existing network rather than existing in isolation, the likelihood of local acceptance and support of the prevention efforts is increased, the likelihood of duplication of effort and services is decreased, and community partners can often identify potential problems and recommend strategies for avoiding or solving them.

Involve Adolescents. Although they may not have as clear an understanding as adults of the causes and effects of different variables, adolescents have a distinctive understanding of the beliefs, attitudes, perspectives, and opinions of their peers. For this reason, adolescents can be particularly valuable in the design, planning, and implementation of intervention programs and research through vehicles such as focus groups, task forces, surveys, and interviews. Adolescents have valuable roles in many areas of intervention, such as merchant education, community education, peer education, curriculum development, and tobacco-free events. As a bonus, adolescent involvement in community-based and school-based prevention efforts is a tobacco-free alternative activity for them.

Adolescent involvement can be encouraged and supported by creating an open and supportive climate. Tobacco use intervention planners should collaborate with organizations and individuals that specialize in working with youth. Such specialized experience and knowledge should be incorporated into prevention intervention

activities. In addition, these organizations have access to a wide range of youth, from accomplished youth leaders to youth considered to be at high risk for substance abuse.

Seek Sustained, Comprehensive Community Support. Both researchers and practitioners should make vigorous efforts to obtain support from the community. These efforts should not be limited to the early phases of an intervention, but should evolve into an ongoing process. Attempts should be made both to retain existing support and to continually seek new support. The support should be comprehensive and come from all vital community localities, such as prominent individuals, community leaders, representatives of the community's ethnic groups, community businesses, merchants, community organizations, students, student organizations, government agencies, and social associations. Support should be sought from government agencies, such as the mayor's office or its equivalent, social service agencies, the police, the judicial system, and the school system. Emphasis should be placed on an aggressive, ongoing partnership of community members.

Use Existing Materials. There exists a wealth of effective printed and audiovisual educational prevention materials regarding adolescents' substance use, much of it in the public domain. When such materials are available and appropriate for the target audience, using them can save time and money. Similarly, modifying existing prevention materials to more effectively meet the needs of a target audience is much less expensive than developing them from scratch. Existing educational materials that are appropriate for one audience may need to be revised to ensure their cultural sensitivity and appropriateness for another. Some programs expand or modify elements of an existing multielement educational program. When such materials include specific identifiers of the community, setting, and sponsors, the sense of partnership and ownership can be enhanced.

Educate Merchants, Law Enforcement Officials, and Judges. For community education components in youth access interventions, prevention efforts should include retail merchants, policy- and decisionmakers, the police, and the judicial system. Retail merchant education should include written materials for retail store owners and clerks and the regional executives of retail store chains. Ideally, these materials should be delivered in person by teams of representatives from the police department, adolescents, and others in the community. Prevention practitioners should aggressively pursue partnerships with the police and judges. Police in some areas are reluctant to enforce adolescent tobacco sales laws and may need persuasion. Similarly, judges are often reluctant to impose consequences on merchants for violating tobacco sales laws. With perseverance and by providing targeted information and education, however, the police and judges can become ardent supporters of prevention efforts.

Gather Data at All Stages. Prevention interventions and community efforts can easily be structured to generate data that are of value to researchers, prevention practitioners, State and local government officials, and the general public. Data collection is easiest and most productive when it is incorporated in the intervention design, not added as an afterthought.

Experience has shown that support from the community, government, and the media is made possible or enhanced when efforts are made to document the extent of the problem before an intervention is undertaken. For example, a city council may not be compelled to ban tobacco sales on city property and at city functions until it is proven that a problem exists. Conducting a baseline survey and providing this information to the community through forums, to the city council through presentations, and to the media through press conferences may increase the likelihood of support for such a ban.

Periodic surveys should be conducted to evaluate the effectiveness of the intervention. Ideally, such data collection should follow changes in the intervention. The collection of data can be an important aspect of continued community prevention activities. For example, surveys based on purchase attempts by adolescents in convenience stores can identify vendors that are complying with local laws. When such vendors are identified, they can be rewarded in several ways, such as publishing a brief article about them in a local paper, giving them gift certificates from other local merchants, or presenting them with awards at community events.

When limited funding for quantitative and qualitative analyses is a problem, it can be useful to enlist the help of staff at universities who may be able to recommend graduate researchers for assistance. However, since analyses conducted through a university will be time intensive, ample time should be allotted for these processes during the planning stages.

Traditionally, program evaluation involves the use of surveys and questionnaires that assume a certain level of literacy. They also often assume a certain level of English comprehension. Program evaluation techniques should therefore be developed that are appropriate for populations who speak little or no English and for those who have a low literacy level.

Prepare for Opposition. It is a fact of life that special interest groups are opposed to many tobacco prevention interventions. These groups, such as members of the tobacco industry, employ impressive legal, political, and media tactics. Community leaders should learn about oppositional strategies and then inform their staff and volunteers. Pro-smoking, mass media efforts by the tobacco industry are often tailored to regional conditions and interests. Therefore, communities should also consider their regional characteristics in developing counter strategies.

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The Dover Youth Access to Tobacco Reduction Program of the Dover Police Department: Dover, New Hampshire.

The Health Is Wealth project of the Asian Health Services: Oakland, California.

The Multicultural Area Health Education Center project: East Los Angeles, California.

The Pajaro Valley Prevention and Student Assistance program of the Pajaro Valley Unified School District: Wastonville, California.

Project SCAN (Stop Children's Addiction To Nicotine): Erie County, New York.

The Ski Tobacco-Free project of the Kirkwood Ski Education Foundation: Kirkwood Ski Resort, Alpine County, California.

The Stop Teenage Addiction to Tobacco program of Stanford University School of Medicine: San Jose, California.

The Stop Tobacco Access for Minors Project of the North Bay Health Resources Center: Sonoma County, California.

The Tobacco-Free Soccer League Initiative Project of the Health Education Council: Sacramento, California.

The Tobacco-Free Youth Project of the COMMIT to a Healthier Raleigh Project: Raleigh, North Carolina.

4 Tobacco Prevention Intervention: Implementation Action Plan

This chapter presents a generic action plan for implementing prevention interventions that practitioners, agencies, and community groups can adapt to meet the needs of specific target groups. Also discussed are cost and measurement issues to assist the practitioner in planning.

Conceptual Framework for Implementing Action Plan

The conceptual model that guides this action plan is based on the hypothesis that a systematic approach to implementing an intervention can lead to identified outcomes. This model focuses on attaining process (primary) outcomes, which are essential to achieving identified impact (secondary) outcomes within the target population. Five sequential process activities—the effective planning, organizing, delivering, monitoring, and evaluating of intervention activities—will result in the following primary outcomes (organized by process activity):

A systematic approach to implementing an intervention can help practitioners and community groups achieve desired goals.

- **Planning: Goals and Objectives Are Documented and Appropriate**—Clearly defined goals and objectives that are appropriate for the target population form the foundation of an effective intervention.
- **Organizing: Resources Support Goals and Objectives**—Goals and objectives cannot be achieved unless resources are allocated appropriately.

- **Delivering:**
  - — **Intervention Activities Support Goals and Objectives**—Practitioners should monitor the intervention to ensure that each goal and its supporting objectives continue to address the intervention. Unforeseen changes in the community can hamper the intervention.
  - — **The Target Population Receives the Intervention**—Practitioners should monitor intervention activities to ensure that the intended target population receives the intervention.
- **Monitoring:**
  - — **Data Are Collected on Attainment of Goals and Objectives**—Practitioners should collect data on the intervention activities implemented for each goal and its objectives.
  - — **Data Are Documented in Standard Format**—A wide variety of data collection instruments are available to practitioners, allowing data to be shared with others and tracked through a standardized documentation trail.
  - — **Data Are Reported**—Practitioners should share data periodically with others in the prevention field and in their communities.
- **Evaluating:**
  - — **Performance Is Assessed Regularly**—Practitioners should view evaluation as an ongoing process, a management tool that is used to improve implementation.
  - — **Performance Is Modified as Appropriate**—Practitioners should fine-tune their interventions as data indicate to best achieve their goals and objectives.

The model further posits that interventions managed in this way will be more likely to effect the intended change in the target population.

Application Issues for Practitioners

Presented here are issues in planning and evaluation that practitioners should consider when designing interventions to utilize the approaches reviewed in Chapter 3. Although these issues are by no means exhaustive, they are particularly relevant to planning effective tobacco use prevention interventions.

Determine the Parameters of the Problem

Gather Baseline Data. Practitioners should determine the extent of tobacco use among youth. This information will help define target populations and program goals, objectives, and activities and determine which intervention is appropriate.

Identify the Target Group. Those at highest risk or the environment most in need of change should be identified through a community analysis or needs assessment. Insight should be obtained from adolescents regarding tobacco use through a small discussion or focus group. In addition, the practitioner should assess:

- The prevalence and patterns of tobacco use among youth in the community in question
- The community's knowledge, attitudes, and practices relating to youth and tobacco products
- The readiness for change in various sectors of the community: Who will work for and who will work against change?
- The ability of adolescents to purchase tobacco in the community
- The adequacy of school curricula designed to prevent tobacco use
- Activities to reduce tobacco use sponsored by the State health department and communities
- Barriers to tobacco use prevention programs in the community, which could include the following:
  - — The community is not ready to support tobacco use prevention programs because community members do not consider tobacco use among youth to be a problem.
  - — The tobacco industry engages in well-organized strategies to promote tobacco use.
  - — The community currently focuses its resources on other priorities, such as illicit drug use or lack of affordable housing, or it lacks the capacity or economic ability to engage in the necessary tobacco use prevention activities.

Mobilize and Organize the Community

Each of the approaches reviewed in Chapter 3 requires some level of community involvement to be effective. Because communities vary in their capacity for involvement, practitioners should keep the following recommendations in mind when planning.

Community members and organizations should be involved in the early planning stages of the intervention through organizing a community group. Community groups appreciate being involved in decisions regarding program planning and intervention activities. Decisions regarding specific interventions, however, should be delayed until all information about the community (e.g., epidemiologic data and needs assessments) is available.

All organizations and individuals in the community with a stake in tobacco control, particularly those with credibility, expertise, and an understanding of target groups, should be identified. The array of organizations that represent diverse groups in the community, especially those that understand the needs of youth at high risk for tobacco use, should be invited to participate in the process. The roles that all participants are expected to fulfill, including the role of the lead agency, should be explained.

Community members and organizations should participate in the chosen intervention with active and specific roles. Practitioners should prepare materials for the commu-

nity group that explain the specific steps of their involvement. Community members and organizations should be involved from the earliest stages of planning. Sustained, comprehensive community support makes the program part of the community and provides the structure necessary for sustained success. A vital community partnership should include the following elements:

- Prominent individuals and community leaders
- Representatives of the community's ethnic groups
- Community businesses, merchants, and organizations
- Students and student organizations
- Representatives of the school system
- Parents and other concerned community members
- Government agencies
- Social agencies and associations
- Mayor's office
- Police and the judicial system

Define Program Goals and Objectives

Once a profile of the problem in the community is compiled, target groups should be selected and goals and objectives defined based on the community's needs. Goals should be realistic and specific and should include the following elements:

- *Who?* The target group for change
- *What?* The action or change expected
- *How much?* The extent of change expected
- *When?* The time frame for change

Select Prevention Approaches, Interventions, and Activities

The six prevention approaches described in Chapter 3 should now be reviewed to determine which are appropriate for the targeted population and which best support the goals and objectives. The interventions selected should actively involve the target population and include an array of activities. Each approach should be reviewed carefully and, before an approach is selected, special attention given to the level of evidence of effectiveness and the lessons learned and recommendations.

Once an approach is selected, suggested activities that will be most helpful in meeting the objective for that intervention should be chosen. The planning group can be called on to develop additional activities that contribute to the achievement of identified goals. The chosen intervention should include activities that support the stated goals and objectives. The intervention or combination of interventions should be tailored to the needs of the community and to the stated goals and objectives. Creativity should be exercised in selecting or designing activities to deliver the intervention.

The new initiatives should be linked to existing programs or activities whenever possible. This approach has several benefits:

- Prevention activities become part of existing networks.
- The likelihood of local acceptance and support is increased.
- Costly duplication of services is avoided.
- A valuable partnership with key community members is developed.

Existing materials should be used whenever possible to save time and funds. A wealth of effective printed and audiovisual prevention materials, much of which is in the public domain, is available on request.

Prevention of smokeless tobacco use should be included in the intervention. In one study, more than 15 percent of nonsmokers and 32 percent of smokers reported using smokeless tobacco during the past month.

The need for programs to help nicotine-dependent youth quit should also be considered. Unfortunately, conventional primary prevention ("don't ever start") or conventional secondary prevention (encouraging people to quit) may not be sufficiently powerful or comprehensive to break nicotine dependence. Special programs for nicotine-dependent youth should become a part of all comprehensive tobacco control programs.

Plan To Implement the Intervention

To facilitate the implementation of the interventions reviewed in this guideline, practitioners should incorporate the following steps into their planning process.

First, determine all needed and available resources, not only for the lead agency, but also for the community group, to deliver the intervention. Resources available through the lead agency should be determined, in addition to those available elsewhere in the community. For example, if the intervention chosen is reducing youth access to tobacco and one of the activities is purchase attempts with incentives to merchants, a commercial organization that is a member of the community group may be willing to provide incentives free of charge.

Second, identify funding sources to support the intervention. There are a number of Federal, State, and private sources of funding for tobacco use prevention programs. Practitioners should determine the range of funding opportunities available and collaborate with other agencies with similar agendas for tobacco use prevention.

Monitor and Evaluate the Effectiveness of the Intervention

Simple data collection and evaluation methods are appropriate to assess the effectiveness of the reviewed approaches, particularly when practitioners consider the following recommendations:

- Efficiently collect and manage data:
  - — Document the implementation of the intervention as planned, including progress reports and lists of participating individuals and organizations and the activities implemented
  - — Document achievement of goals and objectives by conducting surveys to measure attitudes and tobacco use among youth
  - — Gather data continuously in a standard format
- Determine the effectiveness of the implemented intervention, particularly:
  - — Whether the intervention was implemented as planned, the target population was reached, and the goals and objectives were attained
  - — Whether the program had the anticipated effect on the target population

Insights should be obtained into the effectiveness of prevention approaches. If the intervention does not achieve its stated goals and objectives and the anticipated changes in the target population are not seen, practitioners can provide valuable information, such as barriers encountered in implementing the intervention. Documenting this information for other practitioners, researchers, and State and Federal agencies will help improve efforts to reduce tobacco use among youth.

Prevention efforts must be a sustained process, not a single event or campaign. Success in prevention depends on continually assessing and improving interventions. The norms and culture of adolescents are in a constant state of change, and prevention efforts must quickly adapt. If the effort is to be sustained over time, the community partnership must be continually revitalized with new members.

Cost Considerations

Conducting extensive prevention interventions is expensive in terms of both monetary and human resources. In general, community groups do not have adequate resources to support all the activities of multicomponent interventions. By following the guidelines described earlier in this chapter, community organizations will have identified existing efforts in a geographic area and will be able to design activities that complement those efforts. If local activities are few, community organizations can contact schools, local and State health departments, and substance abuse/mental health departments to determine the types of activities that would complement local and State agency plans for tobacco use prevention. Communities and State substance abuse agencies should contact the State agency responsible for tobacco control activities, usually the Department of Health. All States now have funding for tobacco control activities, including prevention, through the ASSIST or IMPACT programs.

The resources needed vary considerably with the approach and are often dependent on the level of sophistication of the planned intervention. Community groups can reduce costs by using existing materials, involving community members (especially youth) to volunteer for staff duties, and planning a practical, simple activity. An

agency or community wishing to apply for funding should be prepared to write a proposal. Many proposals require documented answers to the planning, implementation, and evaluation issues presented above.

Additional Considerations

Recommended Evaluation Designs

Because many of the approaches recommended in this guideline have already been assessed on all evaluation levels, communities and local and State agencies need not make sophisticated designs to evaluate them. In following the generic implementation plan presented here, however, practitioners and community groups can add an evaluation component to document the delivery and impact of their intervention during the first process activity—planning. A simple evaluation to determine the effectiveness of an approach within a target population might include a design with baseline and follow-up measurement of the target population. Such a design would provide for evidence of change within the target population with a minimum of resource investment. In fact, by following the steps within the five process activities outlined here—planning, organizing, delivering, monitoring, and evaluating—this simple evaluation will have been completed. Another type of simple evaluation is a self-comparison. In this case, a community that implements an approach compares itself on appropriate measures with a community that is similar but has not adopted the approach.

Threats to Internal Validity

When a program evaluation is conducted, regardless of the rigor of the evaluation design, the evaluators must consider factors other than the intervention that might account for the outcome. These factors, termed *threats to internal validity*, diminish the likelihood that an observed outcome is attributable to the intervention. The threats to internal validity that are most likely to affect simple evaluation designs are as follows:

- Selection—A selection bias results when certain individuals or groups are, knowingly or unknowingly, selectively included or excluded from the intervention or comparison community. For example, a community may decide to implement a retailer-directed intervention and evaluate the effects of the approach through a comparison with another community. If the comparison community already has a low rate of tobacco purchases by minors, a selection bias will render it difficult to assess the effects of the intervention.
- Measurement—A measurement bias occurs when the measures selected are not reliable or valid. This generally occurs when individuals are surveyed and asked to give information about past behaviors or feelings or when measures are used that have not been proven in research.

- Confounding—A confounding bias occurs when an observed relationship between intervention A and outcome B can be attributed to a third factor, C, which is related to both A and B. In other words, there is a weak or nonexistent relationship between A and B and the explanatory relationship between A and C or between B and C. Age, ethnicity, gender, and socioeconomic status are common confounding factors.

  An example based on the approaches reviewed here might be when a school-linked parental intervention demonstrates that children of parents who received the intervention have a lower smoking rate at 2 years after the intervention than do their peers. If those children were primarily African American and the comparison children were primarily white, this finding would be confounded by ethnicity, because African American adolescents are less likely than white ones to use tobacco. In this case, the results could not necessarily be attributable to the intervention.
- Intervention Contamination—When a control community is used to evaluate the effect of an intervention, and the intervention and comparison communities are geographically close, the comparison community may be unintentionally exposed to the intervention. This type of bias is called *intervention contamination* and is most likely when counteradvertising is chosen as the intervention approach. Counteradvertising generally involves broadcast media, which can be received in nearby communities.
- Randomization or Blinding of Observers—Individuals who interview respondents or make observations should not know whether the respondent has received the intervention. Interviewers who are aware of the respondent's exposure to the intervention may make biased observations. For example, an adolescent recruited to attempt to purchase cigarettes at a retail outlet who is aware that the owner and clerk have been exposed to a retailer intervention may be influenced to be more or less vigorous in the purchase attempt than he or she would otherwise have been.
- History—A significant, unplanned State, local, or other event during the intervention could affect the measured outcome. For example, if a State were to assess the effect of increasing the sales tax on cigarette sales to minors during the implementation of the final Synar Regulation, it might appear that the new tax had affected cigarette sales when in fact, implementation of the new regulation had done so.
- Testing or Observation—Participants' behavior regarding study outcomes can change when they are tested or observed too frequently. The retailer-directed approaches that require observation of clerks and owners thus might result in a testing bias. If the clerk is aware that the purchase attempt is for survey or enforcement purposes, he or she may be less likely to sell to the adolescent.

A positive result can probably safely be attributed to the implementation of the intervention if none of the above threats to internal validity applies. Although one can never be certain that outside factors did not affect the outcome, particularly when a simple evaluation was used, practitioners who follow a sound action plan and consider and rule out alternative explanations may place confidence in the achieved results.

Measurement Considerations

Appropriate data collection is important to the advancement of effective prevention strategies. Researchers and practitioners utilize various measures to gauge the effectiveness and outcomes of interventions. Practitioners and community groups can choose measures appropriate to the approach chosen. Below are presented simple measures for each approach reviewed in this guideline.

Economic Interventions

The primary purpose of economic interventions is to increase the cost of tobacco products. Thus, passing and sustaining a policy or regulation that increases taxes on tobacco products would usually be the outcome of interest for this approach.

Counteradvertising

The intended outcome of counteradvertising is to change youths' perceptions regarding tobacco use. Measures appropriate to assess this approach include their level of knowledge about the extent of tobacco use among their peers and their attitudes about the tobacco industry and tobacco use as a part of growing up.

Retailer-Directed Interventions

Interventions directed at tobacco retailers are intended to reduce minors' access to tobacco by changing the sales practices of tobacco merchants. Measures appropriate for this approach include the level of merchant and clerk awareness concerning sales of tobacco to youth and the purchasability of tobacco by youth in retail outlets.

In addition to deciding among measures of purchasability, practitioners and community groups should consider involving minors in this activity. Nearly all preventionists agree that to establish the prevalence of illegal sales to minors, minors must be recruited to make the purchase attempts. Minors who are enthusiastic about participating in this process can generally be found through the school system. The protection of minors, however, should be ensured through the following precautions:

- All minors should work under the direction and supervision of an adult.
- The adult should drive the minor to the purchase attempt site and establish that it is safe to make the purchase attempt.

- Minors should receive complete training in the purpose and procedures of the activity.
- The protocol for the attempted purchase activity should include parental consent and legal protection of the minors.
- The minor should be discouraged from persisting in the purchase attempt if the clerk refuses the sale.
- Minors should be instructed to tell the truth about their age if asked and to say that the tobacco product is "for me" if asked.
- Minors should be instructed not to attempt the purchase if someone they know is working or present in the outlet.

School-Based Interventions

Appropriate measures for school-based interventions are presented below by cluster, as were the interventions themselves in Chapter 3.

Parental Involvement. Appropriate measures for parental involvement include the number of parents who discuss tobacco use with their children, the number of children who report parental discussion of tobacco use, and the completion rate for homework assignments regarding tobacco use that require children to involve their parents in the assignment.

Student Activism. Appropriate measures for student activism include the number of adolescents who become involved in antitobacco activities, the level of student knowledge regarding the problems that result from tobacco use, and student attitudes toward the tobacco industry and tobacco use.

Media. Interventions that involve media messages to complement school curricula should be assessed according to the number of messages and time of day of message delivery, the extent to which parents and students were exposed to the messages, and whether the messages actually complemented the school curricula.

Tobacco-Free Environments

The objective of establishing tobacco-free environments is to increase the number and types of environments that do not expose children and adults to tobacco products. Thus, measures of this approach include the successful passage of policies and regulations to limit the types of environments in which tobacco can be used and the enforcement of these policies and regulations.

Advertising and Promotion Restriction Interventions

Measures of the success of restrictions on advertising and promotion include the passage of legislation that restricts the placement of tobacco advertisements and promotions of events and the adoption of policies by organizations not to accept money

from the tobacco industry to fund public and private events. Another positive measure is the identification and procurement of alternative sources of funding to support activities and events.

Estimating the Incidence and Prevalence of Adolescent Tobacco Use

Practitioners and community groups can use the measures presented above to determine the immediate impact of the implemented approach. It is also recommended that practitioners and community groups continuously collect data on the incidence and prevalence of tobacco use in their communities and States to monitor changes in tobacco use among youth following the intervention.

In this document, the term *tobacco use* is used to refer to the use of cigarettes and/or smokeless tobacco. We recommend that practitioners measure the use of both of these products in their adolescent populations. To measure incidence, or age at first tobacco use, the following questions are recommended:

- How old were you when you smoked a whole cigarette for the first time?
- How old were you when you used snuff or chewing tobacco for the first time?

To measure prevalence, or current use of tobacco, each of the following questions should be included in a survey:

- Have you only smoked cigarettes in the past 30 days?
- Have you only used smokeless tobacco in the past 30 days?
- Have you used both cigarettes and smokeless tobacco in the past 30 days?
- During the last 30 days, on how many days did you smoke cigarettes?
- During the last 30 days, on how many days did you use snuff or chewing tobacco?

Practitioners and community groups can estimate the prevalence of tobacco use in the adolescent population as the combined total of these three measures: Any use in the past 30 days? Daily use in the past 30 days? Lifetime use? Asking all three questions allows the practitioner to measure all tobacco use in the population accurately and to plan an intervention that targets the use of cigarettes or smokeless tobacco or both. In addition, to make intervention planning more effective, it is recommended that practitioners and community groups collect gender-specific data, given the differences in use of cigarettes and smokeless tobacco by boys and girls.

Summary

Those who follow the planning, implementation, and evaluation process presented here to implement the approaches reviewed in Chapter 3 are likely to be successful in reducing tobacco use among youth. Practitioners, policymakers, and researchers are encouraged to use systematic protocols or action plans to confront the challenge of reducing tobacco use among the nation's youth.

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Appendix B: Research and Practice Search Protocols

Literature Information Search

Protocol for Identifying Research Evidence

To facilitate preparation of this guideline, the Federal Resource Panel identified literature focusing on youth access to tobacco and enforcement issues in a DIALOG search. Medline 1966+, Health Periodicals, Cancerlit, and Smoking and Health databases were accessed with the following key words: youth and tobacco, and youth access to tobacco.

The panel then prepared the *Youth & Tobacco Products Prevention Sourcebook.* This document focuses on the prevention of youth access to tobacco. The Tobacco Expert Panel and Planning Group expanded the scope of the guideline and identified additional literature in the following categories:

- Youth and tobacco
- Advertising/marketing
- School-based approaches
- Role modeling by adults
- Peers
- Organizational efforts
- Etiology/predisposing factors
- Methodology
- Special populations
- Parent/family
- Tobacco access policy

The panel conducted a second DIALOG search of the Medline 1966+, Health Periodicals, Cancerlit, and Smoking and Health databases. The search was restricted to articles published during 1993 and 1994. The following key words were used:

- (Youth or kids) and (tobacco or smoking)
- Smokeless tobacco and (youth or kids)
- (Tobacco or smoking) and research and youth
- (Tobacco or smoking) and youth programs
- (Tobacco or smoking) and (State or regional)

A search was also conducted on Medline CD-ROM at the U.S. Public Health Service's Parklawn Health Library in Rockville, Maryland. The following key words were used:

- (Youth or kids) and tobacco
- (Youth or kids) and smoking
- (Youth or kids) and smokeless tobacco
- Smokeless tobacco
- Tobacco and State programs
- Smoking and State programs
- (Tobacco or smoking) and regional programs
- (Tobacco or smoking) and youth research
- (Tobacco or smoking) and youth programs

The Tobacco Expert Panel reviewed the resulting citations and provided additional key citations including some from the 1994 Surgeon General's report. They then checked the references in the retrieved literature for other citations and scanned the journals in which most of them were published for relevant articles for the period between June 1993 and June 1994.

PEPS staff sent a list of articles reviewed in the guideline to the Tobacco Expert Panel one week before the June meeting to allow time for review, and solicited additions to the list. At the next meeting the Expert Panel discussed procedures for accessing fugitive literature, and the materials were retrieved. PEPS staff conducted a third DIALOG search of the Medline 1966+, Health Periodicals, Cancerlit, and Smoking and Health databases, using the following key words:

- Youth and tobacco
- Tobacco advertising
- Tobacco sponsorship
- Mass media and tobacco use prevention
- Tobacco prevention and parent programs

PEPS staff reviewed the retrieved articles. Those relevant to the topic and discussing the application of an intervention or policy to reduce tobacco use among youth were selected for annotation. They then annotated articles that met the criteria and then organized them by approach. The Tobacco Expert Panel Subgroup reviewed the articles and determined that 29 articles would be included in the guideline.

Results

A total of 310 articles were retrieved, of which 36 articles representing 28 studies were included in the guideline.

Practice Information Search

Protocol for Soliciting Practice Evidence

Single State and Territorial Agency Directors, State National Prevention Network Designees, and Association of State and Territorial Health Officers (ASTHO) tobacco prevention contacts were sent a letter requesting information on community-based tobacco use prevention programs. The letter included a short nomination form (Figure B-1) requesting contact information concerning practice projects and a longer nomination form requesting specific project information.

Other groups that received requests for nomination were

- The Robert Wood Johnson Foundation
- Stop Teenage Addiction to Tobacco
- The American Lung Association
- The American Heart Association
- The American Cancer Society

Follow-up phone calls were made to the State contacts requesting the return of the nomination forms. At least one project was nominated from each State. Follow-up faxes requesting project information were sent to all contact persons listed for the nominees. All nominated projects were reviewed. Those meeting the following criteria were selected for annotation:

- Clearly stated objectives
- Definition and description of the intervention
- Process evaluation documentation
- Outcome evaluation information
- Adequate documentation to annotate the project

Projects that met the criteria were annotated and organized by approach. The annotations were reviewed by a Tobacco Expert Panel Subgroup for inclusion in the guideline.

Results

The subgroup reviewed 81 programs and selected 13 practice cases for the guideline.

FIGURE B-1: Practice Evidence Nomination Form

Criteria for PEPS Program Review/Triage (Please check all questions that apply.)	YES	NO	DO NOT KNOW
Planning/Rationale			
Was a community/group needs assessment conducted?			
Were specific research findings/concepts used as a basis for program planning?			
Program Design			
Are objectives clearly documented?			
Are selected strategies/activities explicitly related to stated objectives?			
Documentation			
Is there a system in place for documenting implementation and operations?			
Is there a system in place for documenting outcomes?			
Are progress reports, program assessments, and evaluation results available?			
Are training materials and/or operations manuals available?			
Evaluation/Outcomes			
If program has ended: Did the program achieve desired outcomes or related positive outcomes?			
If program has not ended: Are there specific plans to assess outcomes?			
Replication			
Does the program show promise for replication?			
Has this program been replicated?			

Appendix C: Methodology for Arriving at Recommendations

Analysis of Research and Practice Evidence

The analysis of research and practice evidence was conducted on two levels. First, each research study and practice case was analyzed with regard to design strengths, weaknesses, and potential biases. Second, each group of research articles and/or practice cases was analyzed by each approach.

Individual Level Analysis

Each research study and practice case was analyzed with regard to overall summary information, intervention factors, and research design. Also, practice evidence was analyzed in terms of process evaluation. The format for analyzing research studies and practice cases, the annotation key, is shown in Exhibit C-1.

Summary information included an overview of the evidence, the stated or assumed implied hypothesis guiding the intervention, and a description of the conceptual framework, if any. The summary included the purpose of or rationale for the study and the objectives of the intervention. The findings were described, including primary and secondary study outcomes and unintended outcomes, if any.

A substantial amount of information was collected for each intervention. This included the type of intervention; the drugs of abuse, drug-related behaviors, and individual and environmental risk factors being studied; the target population; the social or institutional systems involved; the type of approaches being used; and the specific approaches and activities of the intervention.

EXHIBIT C-1: Annotation Shell

(Citation)

SECTION 1: SUMMARY

OVERVIEW
HYPOTHESIS
CONCEPTUAL FRAMEWORK
PURPOSE
OBJECTIVES
FINDINGS
CONCLUSIONS

SECTION 2: THE INTERVENTION

TYPE OF INTERVENTION
DRUGS OF ABUSE
ATOD-RELATED BEHAVIORS
GENERAL RISK FACTORS
TARGET ENVIRONMENT OR POPULATION
SOCIAL OR INSTITUTIONAL SYSTEMS INVOLVED
STRATEGIES
ACTIVITIES

SECTION 3: PROCESS EVALUATION

NUMBER OF PERSONS OR AGENCIES SERVED
SOCIODEMOGRAPHIC INFORMATION
AMOUNT OF SERVICE PROVIDED
NUMBER OF MATERIALS DISTRIBUTED AND CALLS RECEIVED
LIST OF COLLABORATORS
WORK PLANS AND PROGRESS REPORTS
NEEDS ASSESSMENT
TARGET GROUP REPRESENTATION IN PROGRAM
FACILITATION OF OBJECTIVES BY ACTIVITIES
APPROPRIATENESS OF MATERIALS
RECIPIENT PARTICIPATION AS EXPECTED

SECTION 4: RESEARCH DESIGN

EVALUATION OR STUDY DESIGN
MEASUREMENT
ANALYSES
ASSESSMENT OF EVIDENCE
AUTHOR DISCUSSION OF BIAS
COMMENTS

The evaluation of the research design was comprehensive and included noting the specific research design employed, the specific behaviors or changes being measured, and statistical analyses used. The process included a comprehensive review of biases that might have influenced the outcomes and attribution of effect.

Each prevention practice case was evaluated with regard to process. The adequacy of quantitative and qualitative information collected was assessed.

Group Level Analysis (Overall Level of Evidence)

Once research and practice evidence was analyzed on an individual level, the practice cases were analyzed according to prevention approach. The goal of this analysis was to determine what conclusions could be drawn about the evidence within a prevention approach and ascertain the strength of the evidence supporting the conclusions as strong, medium, suggestive but insufficient evidence, or substantial evidence of ineffectiveness. These levels are summarized in Table C-1.

Criteria for Determining Level of Evidence

The criteria for *strong level of evidence* were consistent positive results of strong or medium effect from at least three well-executed studies with experimental or quasi-experimental designs. Alternatively, two well-executed research studies with experimental or quasi-experimental designs and consistent results from at least three case studies were accepted.

Either way, the use of at least two methodologies, unambiguous time ordering of the intervention and its results, and a plausible conceptual model ruling out or controlling for alternative causal paths or explanations were required.

The criteria for *medium level of evidence* were consistent positive results from a series of studies, including at least two well-executed studies with experimental or quasi-experimental designs. Alternatively, there can be at least one well-executed study and three prevention case studies showing statistically significant or qualitatively clear effects.

Either way, there should be the use of at least two different methodologies, unambiguous time-ordering of intervention and results when so measured, and a plausible conceptual model, whether or not competing explanations have been ruled out.

A third category, *suggestive but insufficient evidence*, was used to describe research and/or practice evidence that was based on a plausible conceptual model or on previous research and was being demonstrated in rigorous evaluation studies or appropriate intervention programs. One of two conditions typically prompted this categorization. In the first condition, the evidence, although limited, appeared to

TABLE C–1: Criteria for Grading Levels of Evidence	
Level of Evidence	**Criteria**
1. Strong	a. Consistent positive results of strong or medium positive effect from a series of studies, including at least three well-executed studies with experimental or quasi-experimental designs; determination of this level is strengthened by evidence from research in which at least two different methodologies were used OR Evidence from two well-executed research studies with experimental or quasi-experimental designs and consistent results from at least three case studies b. Unambiguous time ordering of intervention and results c. Existence of a plausible conceptual model, ruling out or controlling for alternative causal paths or explanations
2. Medium	a. Consistent positive results from a series of studies, including at least two well-executed studies with experimental or quasi-experimental designs; determination of this level is strengthened by evidence from research in which at least two different methodologies were used OR At least one well-executed study and three case studies showing statistically significant or qualitatively clear effects b. Unambiguous time ordering of intervention and results, when measured c. Existence of a plausible conceptual model, whether or not competing explanations have been ruled out
3. Suggestive but insufficient evidence	a. Based on plausible conceptual model or previous research b. Rigorous evaluation studies or appropriate intervention programs are in process c. Minimal available evidence linking intervention being tested to positive effect
4. Substantial evidence of ineffectiveness	The absence of a statistically significant effect or evidence of a statistically significant negative effect in a majority of well-executed studies, including at least two quantitative studies with sample sizes sufficient to test for the significance of the effect

support a conclusion, but additional research was needed to fully support this conclusion. This condition often applies to areas in which there has been little study, such as those that are impractical to research or are new. The second condition involves equivocal results: a specific conclusion is supported in some studies but is not supported in others.

The three categories described above provide a way to arrange research and practice evidence for which there are varying degrees of confirmation of positive effect. A fourth category, *substantial evidence of ineffectiveness*, describes research and practice evidence demonstrating that a prevention approach is not effective. The criterion for inclusion in this category is the absence of a statistically significant effect or evidence of a statistically significant negative effect in a majority of well-executed studies, including at least two quantitative studies with sample sizes sufficient to test for the significance of the effect.

Rules of Evidence Abstract

In 1992 the Center for Substance Abuse Prevention (CSAP) created the Prevention Enhancement Protocols System (PEPS) as a part of its initiative to support and strengthen the prevention systems in the States and Territories. PEPS aims to compile, analyze, and synthesize existing knowledge on topics in the prevention of alcohol, tobacco, and other drug (ATOD) problems. These topics are chosen to represent those considered by the field to have major consequences and for which there is substantial knowledge available to synthesize in the form of specific guidelines. The PEPS guidelines are designed to assist States, practitioners, and community-based organizations in planning programs, allocating resources, and choosing program options that are appropriate for the needs of their target populations.

CSAP—as well as other Federal, State, and community-based organizations—has made several previous attempts to provide guidance to the field. PEPS, however, is the first known systematic guideline development process in the field of substance abuse prevention. Although the accumulated knowledge and practice in the field of prevention in general and substance abuse prevention in particular present special challenges for developing systematic guidelines, PEPS has benefited from earlier efforts by Federal agencies and professional medical societies in developing guidelines for medical practice.

Early in the PEPS program, CSAP was faced with the choice of developing guidelines through primary reliance on professional consensus or on explicit evidence. Under the former methodology, a group of well-known consultants is assembled and asked to develop the guidelines based on their knowledge of the literature and their own experience. Under the latter methodology, published and unpublished evidence on a given guideline topic is researched according to a defined protocol and analyzed

for validity. The accumulated evidence is then synthesized and its strength assessed according to clearly defined rules before recommendations are developed.

Although the evidence-based approach demands greater effort and investment of resources, CSAP decided that developing the guidelines on the basis of explicit evidence would provide more valid tools for prevention planners and practitioners and would also further the quest for new knowledge in areas where evidence is weak or lacking. To this end, the *PEPS Planning Manual* was developed to instruct the participants in the various stages of the development of guidelines under the PEPS program.

The planning manual contains a rules of evidence document, that provides criteria for assessing the strength of available evidence on the effectiveness of ATOD problem prevention interventions, measures, and programs. The application of the presented criteria is used by PEPS as the basis for decisions about the level of evidence available about a particular intervention. The level of evidence indicates the level of confidence that there is a causal relationship between a prevention intervention and a change in the outcome(s) of interest and the overall effectiveness of the prevention activity.

The planning manual also presents definitions of research and practice evidence. These definitions are followed by summaries of methodological and design issues to be considered in assessing studies and programs, criteria for determining the strength of evidence for the effectiveness of an intervention, combining research and practice evidence, and procedures for specifying the conditions under which the relationship between an intervention and an outcome operates. The strength or level of evidence for an intervention and the conditions under which this level operates serve as recommendations for applying this intervention to the field.

The assessment criteria and levels of evidence discussed in this appendix were developed for use in the evaluation of existing research and practice evidence. They were not intended for use in designing interventions or research studies or for developing policy.

Table C-1 shows the criteria used by PEPS for grading available research and practice evidence for an ATOD problem prevention intervention to determine a level of evidence regarding its effectiveness.

Assessment of the Evidence

Biases

Biases are sources of systematic errors that arise from faulty design, poor data collection procedures, or inadequate analysis. These errors diminish the likelihood that an observed outcome is attributable to the intervention. Biases are inherent in many

nonexperimental observational studies but are of special significance in case-control-led studies. Experimental and quasi-experimental study designs control for one or more of these biases.

Selection Bias. A selection bias results when certain individuals are, knowingly or unknowingly, selectively included or excluded from the case or the control group. The systematic and disproportionate frequency of important variables in the cases or the controls may result in a spurious measure of association. Epidemiological studies are laden with potential selection biases, including selective admission, selective nonparticipation, selective survival, and selective detection. An example of selection bias is when a comparison group is not equivalent to the intervention group because of demographic, psychosocial, or behavioral characteristics.

Case-control-led studies are especially susceptible to selection bias. Thus, multiple control groups should be chosen instead of only one, and at least one of the groups should come from the same source of care as the case group.

Measurement Bias. Measurement bias may result when the information collected on either the exposure variable or the health state is unreliable or invalid. Historical data obtained by interviewing subjects but without appropriate validation against recorded data or interviews with collateral sources are especially susceptible to one form of information bias, called *recall bias*. Another common type of measurement bias is the use of scales that have not been tested for reliability or validity. Ways to control for information bias include using only accurately recorded data, validating interview information, blinding the investigator to the identity of the case or the controls, and adhering to an explicit, standardized method of data collection.

- Confounding bias—An observed effect between intervention A and outcome B may actually be attributable to a third factor, C, which is related to both A and B. In other words, the relationship between A and B is weak or nonexistent, and the explanatory relationship is between C and A or C and B. Thus, an effect can be detected that is attributable to a confounding factor, not to the intervention or policy. Age, ethnicity, sex, and socioeconomic status are important confounders. Ways to control for confounding bias include matching techniques in the design stage and using stratification and multivariate analysis during the analysis stage.
- Attrition—Attrition that is nonrandom or excessive (defined as a dropout rate of 10 percent or more) in the intervention or the control group can introduce a bias in the outcome data. A differential between the groups' dropout rates may also introduce a bias in outcome data.

Internal Validity

Internal validity is the extent to which an observed effect can be attributed to an intervention. Threats to internal validity are particularly germane to intervention studies, although policy and nonintervention studies may be susceptible to threats relating to statistical power, history, and unit of assignment.

The overall issue regarding internal validity is whether the intervention or some other factor(s) produced the observed effect:

- **Equivalence**—For studies that have an intervention group and a control or comparison group, comparisons between the two groups are most valid when they consist of subjects that are essentially similar at the beginning of the study. When this is not true, outcomes observed may not be attributable to the intervention because the groups were already different in some way.
- **Statistical Power**—To detect statistically significant differences in outcomes, there should be an adequate number of participants in each of the intervention and control or comparison groups. The minimum number of participants in each group should be about 30. Having fewer than 30 participants per group generally yields inadequate statistical power. Regardless of the total number in a group, the groups should be about the same size.
- **Intervention Contamination**—It is important for the control or comparison group to remain unaffected by the intervention. For example, if the control or comparison group were to receive information about the intervention and apply it to themselves, this might obscure the effects of the intervention.
- **Randomization or Blinding of Observers**—When research study staff know the status of an individual or a group in a study (intervention or control status), they may change their own behavior in ways that can affect the study outcome. To minimize the chance of this bias, the observers can be either blinded to the conditions or randomly assigned to measure either intervention or comparison groups.
- **Fidelity**—The intervention should be delivered consistently during the intervention period. Ideally, the researchers will have used a written protocol for the intervention delivery and will have documented a standard delivery to all study participants.
- **Unit of Analysis and Unit of Assignment**—Participants in a prevention program can be assigned to control or intervention status on an individual basis or on a collective basis, such as a classroom or a community. Similarly, the analysis of a research study can be done individually or collectively. The unit of assignment and the unit of analysis should be the same when researchers analyze the effects of the intervention.

- History—A significant and unplanned national, State, local, or internal organizational event or exposure at the program site during the study evaluation period can result in a change by participants. In studies with a time series design, history is the principal threat to internal validity. For these studies, it is particularly important to assess the plausibility of effects of factors such as weather, the seasonality, shifts in personnel, changes in resources, or the enactment of a new law or policy.
- Program or Participant Maturation—Natural, biological, social, behavioral, or administrative changes among the participants or staff members during the study period may result in program or participant maturation and could partially account for the results obtained. Such changes include growing older, becoming more skilled, or for staff, becoming more effective and efficient in program delivery.
- Testing or Observation—Participants' behavior regarding study outcomes can change when they are tested or observed frequently. Measurements made too frequently can themselves change the behavior and responses of study participants. The behavior of study subjects can change simply because, for example, they are taking a test or being interviewed or observed.
- Statistical Regression—Statistical regression can result when an intervention or comparison group is selected on the basis of an unusually high or low level of a characteristic that may change naturally in subsequent measurements. The extent to which regression compromises results can be determined by examining the comparability of people who participate and those who do not. Controlling for statistical regression is difficult in studies employing a one-group pretest and posttest design or a nonequivalent control group.
- Interactive Effects—Any combination of the preceding factors constitutes interactive effects.

External Validity

The focus of external validity is generalizability, that is, the extent to which an observed effect that is attributable to an intervention can be expected in other settings and populations with similar or different characteristics:

- Contextual Factors—In the ATOD abuse prevention field, contextual factors relates to the degree to which a community is ready to prevent ATOD use. Indicators of community readiness include favorable attitudes, norms, and restrictive policies. Results of studies of communities with a high degree of readiness for prevention may not be generalizable to all communities. For example, the ability to establish outdoor tobacco advertising restrictions would differ between California and North Carolina.

- Generalizability—Factors unique to a study make it difficult to generalize the findings to similar or general populations. For instance, a school-based intervention in a primarily urban setting for African American students may not be generalizable to a suburban school setting with primarily refugee students.

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Appendix D: Collateral Research

Presented here are citations of selected research involving related substance abuse areas and populations. Further information about the effectiveness of some approaches discussed in this guideline may be derived from these publications.

General

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Appendix E: Abbreviations and Glossary

Abbreviations

ADAMHA	Alcohol, Drug Abuse, and Mental Health Administration
AIDS	Acquired Immunodeficiency Syndrome
ASSIST	American Stop Smoking Intervention Study
CDC	Centers for Disease Control and Prevention
DHHS	U.S. Department of Health and Human Services
EPA	Environmental Protection Agency
FCC	Federal Communications Commission
FDA	Food and Drug Administration
FTC	Federal Trade Commission
GAO	U.S. General Accounting Office
IMPACT	Initiatives to Mobilize for the Prevention and Control of Tobacco Use
MTF	Monitoring the Future
NHSDA	National Household Survey on Drug Abuse
OTA	Office of Technology Assessment

PEPS	Prevention Enhancement Protocols System
SAMHSA	Substance Abuse and Mental Health Services Administration
YRBSS	Youth Risk Behavior Surveillance System

Glossary

Assignment—the process by which researchers place study subjects in an intervention, control, or comparison group. Experimental design studies randomly assign study subjects to both intervention and control conditions. Quasi-experimental studies nonrandomly assign study subjects to intervention and comparison conditions. Random assignment increases he likelihood that the intervention and control groups are equal or comparable and have similar characteristics. *See* comparison group and control group.

Attrition—an unplanned reduction in the size of the study sample due to participants dropping out of the evaluation, such as due to relocation.

Behavioral Factors—certain patterns of conduct increase the likelihood of youth using tobacco. Most prominent of these are behaviors that lead to the perception of tobacco use as functional or appropriate. *See* environmental factors, personal factors, and sociodemographic factors.

Bias—the extent to which a measurement, sampling, or analytic method systematically underestimates or overestimates the true value of an attribute. In general, biases are sources of systematic errors that arise from faulty designs, poor data collection procedures, or inadequate analyses. These errors diminish the likelihood that observed outcomes are attributable to the intervention.

Cluster—subsets of prevention approaches. *See* prevention approach.

Community—a group of individuals who share cultural and social experiences within a common geographic or political jurisdiction.

Community-Based Approach—a prevention approach that focuses on the problems or needs of an entire community, including large cities, small towns, schools, worksites, and public places. *See* individual-centered approach.

Community Readiness—the degree of support for or resistance to identifying substance use and abuse as significant social problems in the community. Stages of community readiness for prevention provide an appropriate framework for understanding prevention readiness at the community or State level. *See* community tolerance, confirmation/expansion, denial, initiation, institutionalization, preparation, preplanning, professionalization, and vague awareness.

Community Tolerance—is present when community norms actively encourage problematic behavior, which is viewed as socially acceptable. *See* community readiness.

Comparison Group—in quasi-experimental evaluation design, a group of evaluation participants that is not exposed to the intervention. This term usually implies that participants are *not* randomly assigned, but have characteristics similar to the intervention group. *See* quasi-experimental design.

Conceptual Framework—in this guideline, the philosophical basis for a prevention approach. Specifically, the assumed reasons or hypotheses that explain why the interventions in a specific prevention approach should work.

Confirmation/Expansion—the stage in which existing prevention programs are viewed as effective and authorities support expansion or improvement of the efforts. Data are routinely collected at this stage, and there is a clear understanding of the local problem and the risk factors for the problem. New programs are being planned to reach other community members at this stage. *See* community readiness.

Construct—an attribute, usually unobservable, such as educational attainment or socioeconomic status that is represented by an observable measure.

Control Group—in experimental evaluation design, a group of participants that is essentially similar to the intervention group but is not exposed to the intervention. Participants are designated to be part of either a control or intervention group through random assignment. *See* experimental design.

Conventional Primary Prevention—substance abuse prevention approaches that focus on deterring initial use. *See* conventional secondary prevention.

Conventional Secondary Prevention—psychology-based substance abuse prevention approaches that encourage people to stop. *See* conventional primary prevention.

Correlational Analysis—a form of relational analysis that assesses the strength and direction of association between variables.

Cross-Sectional Design—a research design that involves the collection of data on a sample of the population at a single point in time. When exposure and health status data are collected, measures of associations between them are easily computed. However, because health status and exposure are measured simultaneously, inferences cannot be made that the exposure causes the health status.

Data Analysis—the process of examining systematically collected information.

Denial—the stage in which the behavior is not usually approved of according to community norms. At this stage, people are aware that the behavior is a problem but believe that nothing needs to or can be done about the behavior at a local level. *See* community readiness.

Design—often referred to as research or study design, is an outline or plan of the procedures to be followed in scientific experimentation in order to reach valid conclusions. *See* experimental design, nonexperimental design, quasi-experimental design.

Environmental Factors—those that are external or are perceived to be external to an individual but that may nonetheless affect his or her behavior. A number of these factors are related to the individual's family of origin, while others have to do with social norms and expectations. *See* behavioral factors, personal factors, and sociodemographic factors.

Experimental Design—a research design that includes random selection of study subjects, an intervention and a control group, random assignment to the groups, and measurements of both groups. Measurements are typically conducted prior to and always after the intervention. The results obtained from these studies typically yield the most interpretable, definitive, and defensible evidence of effectiveness.

External Validity—the extent to which outcomes and findings apply (or can be generalized) to persons, objects, settings, or times other than those that were the subject of the study. *See* validity.

Focus Group—a qualitative research method consisting of a structured discussion among a small group of people with shared characteristics. Focus groups are designed to identify perceptions and opinions about a specific issue. They can be used to elicit feedback from target group subjects about prevention strategies.

Fugitive Literature—articles or materials of a scientific or academic nature that are typically unpublished, informally published, or not readily available to the scientific community, such as internal reports and unpublished manuscripts. In this guideline, some practice cases are considered fugitive literature.

Incidence—the number of new cases of a disease or occurrences of an event in a particular period of time, usually expressed as a rate with the number of cases as the numerator and the population at risk as the denominator. Incidence rates are often presented in standard terms, such as the number of new cases per 100,000 population.

Individual-Centered Approach—a prevention approach that focuses on the problems and needs of the individual. *See* community-based approach.

Initiation—the stage in which a prevention program is under way but is still "on trial." Community members often have great enthusiasm for the effort at this stage because obstacles have not yet been encountered. *See* community readiness.

Institutionalization—occurs when several programs are supported by local or State governments with established (but not permanent) funding. Although the program is accepted as a routine and valuable practice at this stage, there is little perceived need for change or expansion of the effort. *See* community readiness.

Instrument—a device that assists evaluators in collecting data in an organized fashion, such as a standardized survey or interview protocol.

Intended Measurable Outcomes—in this guideline, the overall expected consequences and results of the interventions within each prevention approach.

Intermediate Outcome—an intervention outcome, such as changes in knowledge, attitudes, or beliefs that occurs prior to and is assumed to be necessary for changes in an ultimate or long-term outcome, such as prevention of or decreases in substance use and substance-related problems.

Internal Validity—the ability to make inferences about whether the relationship between variables is causal in nature and, if it is, the direction of causality.

Intervention—a manipulation applied to a group in order to change behavior. In substance abuse prevention, interventions at the individual or environmental level may be used to prevent or lower the rate of substance abuse or substance abuse-related problems.

Lessons Learned—in this guideline, conclusions that can be reached about a specific prevention approach which are based on the research and practice evidence reviewed to evaluate the prevention approach.

Maturation Effects—changes in outcomes that are attributable to participants' growing older, wiser, stronger, more experienced, and the like, solely through the passage of time.

Mean—the arithmetic average of a set of numeric values.

Methodology—a procedure for collecting data. *See* instrument.

Multicomponent Programs—a prevention approach that simultaneously uses multiple interventions that target one or more substance abuse problems. Programs that involve coordinated multiple interventions are likely to be more effective in achieving the desired goals than single-component programs and programs that involve multiple but uncoordinated interventions. *See* single-component programs.

Multivariate—an experimental design or correlational analyses consisting of many dependent variables. *See* variable.

Nonexperimental Design—a type of research design that does not include random assignment or a control group. With such research designs, several factors prevent the attribution of an observed effect to the intervention.

Outcome Evaluation—analyses which focus research questions on assessing the effects of interventions on intended outcomes. *See* process evaluation.

Personal Factors—the cognitive processes, values, personality constructs, and sense of psychological well-being inherent to the individual and through which societal and environmental influences are filtered. *See* behavioral factors, environmental factors, and sociodemographic factors.

Practice Evidence—in this guideline, information gained from prevention practice cases, generally compiled in the form of case studies, which often include process evaluation information on program implementation and procedures. *See* research evidence.

Pre-Post Tests—in research design, the collection of measurements before and after an intervention to assess its effects.

Preparation—the stage in which plans are being made to prevent the problem, leadership is active, funding is being solicited, and program pilot testing may be occurring. *See* community readiness.

Preplanning—the stage in which there is a clear recognition that a problem with the behavior exists locally and that something should be done about it. At this stage, general information on the problem is available and local leaders needed to advance change are identifiable, but no real planning has occurred. *See* community readiness.

Prevalence—the number of all new and old cases of a disease or occurrences of an event during a particular period of time, usually expressed as a rate with the number of cases or events as the numerator and the population at risk as the denominator. Prevalence rates are often presented in standard terms, such as the number of cases per 100,000 population.

Prevention Approach—in this guideline, a group of substance abuse prevention activities that broadly share common methods and strategies, assumptions (theories or hypotheses), goals, and/or outcomes. *See* cluster.

Probability Sampling—a method for drawing a sample from a population such that all possible samples have a known and specified probability of being drawn.

Process Evaluation—an assessment designed to document and explain the dynamics of a new or continuing prevention program. Broadly, a process evaluation describes what happened as a program was started, implemented, and completed. A

process evaluation is by definition descriptive and ongoing. It may be used to the degree to which prevention program procedures were conducted according to a written program plan. *See* outcome evaluation.

Professionalization—the stage in which detailed information has been gathered about the prevalence, risk factors, and etiology of the local problem. At this point, various programs designed to reach general and specific target audiences are under way. Highly trained staff run the program and community support and involvement are strong. Also at this stage, effective evaluation is conducted to assess and modify programs. *See* community readiness.

Program Evaluation—the application of scientific research methods to assess program concepts, implementation, and effectiveness. *See* outcome evaluation, process evaluation.

Protective Factor—an influence that inhibits, reduces, or buffers the probability of drug use, abuse, or a transition to a higher level of involvement with drugs. *See* risk factor.

Qualitative Data—generally constitute contextual information in evaluation studies and usually describe participants and interventions. Often presented as text, the strength of qualitative data is its ability to illuminate evaluation findings derived from quantitative methods. *See* quantitative data.

Quantitative Data—in evaluation studies, measures that capture changes in targeted outcomes (e.g., substance use) and intervening variables (e.g., attitudes toward use). The strength of quantitative data is its use in testing hypotheses and determining the strength and direction of effects. *See* qualitative data.

Quasi-Experimental Design—a research design that includes intervention and comparison groups and measurements of both groups, but assignment to the intervention and comparison conditions is not done on a random basis. With such research designs, attribution of an observed effect to the intervention is less certain than with experimental designs.

Questionnaire—research instrument that consists of written questions, each with a limited set of possible responses.

Random Assignment—the process through which members of a pool of eligible study participants are assigned to either the intervention group or a control group on a random basis, such as through the use of a table of random numbers.

Reliability—the extent to which a measurement process produces similar results on repeated observations of the same condition or event.

Representative Sample—a segment of a larger body or population that mirrors in composition the characteristics of the larger body or population.

Research—the systematic effort to discover or confirm facts by scientific methods of observation and experimentation.

Research Evidence—in this guideline, information obtained from research studies conducted to evaluate the effectiveness of an intervention and typically published in peer-reviewed journals. The basis of this information is investigations whose designs range from experimental to quasi-experimental to nonexperimental. *See* practice evidence.

Risk Factor—an individual attribute, individual characteristic, situational condition, or environmental context that increases the likelihood of drug use or abuse or a transition in level of involvement with drugs. *See* protective factor.

Sample—a segment of a larger body or population.

Simple Random Sample—in experimental research designs, a sample derived from indiscriminate selection from a pool of eligible participants, such that each member of the population has an equal chance of being selected for the sample. *See* stratified random sample.

Single-Component Programs—a prevention approach using a single intervention or strategy to target one ore more problems. *See* multicomponent programs.

Sociodemographic Factors—sociodemographic factors that affect an adolescent's risk for initiating tobacco use have an indirect but powerful influence due to the limitations of the political, social, economic, and educational systems of society. *See* behavioral factors, environmental factors, and personal factors.

Statistical Significance—refers to the strength of a particular relationship between variables. A relationship is said to be statistically significant when it occurs so frequently in the data that the relationship's existence is probably not attributable to chance.

Stratified Random Sample—in experimental research designs, a sample group derived from indiscriminate selection from different subsegments of a pool of eligible participants (e.g., men and women). *See* simple random sample.

Threats to Internal Validity—the factors other than the intervention that evaluators must consider when a program evaluation is conducted, regardless of the rigor of the evaluation design, that might account for or influence the outcome. They diminish the likelihood that an observed outcome is attributable to the intervention.

Time-Series Design—a research design that involves an intervention group evaluated at least once prior to the intervention and is retested more than once after the intervention. A time-series analysis involves the examination of fluctuations in the rates of a condition over a long period in relation to the rise and fall of a possible causative agent.

Tobacco Control—the term used to describe the range of efforts employed to regulate tobacco products.

Tobacco Use—the use of cigarettes and/or smokeless tobacco.

Vague Awareness—the stage in which there is a general feeling that the behavior is a local problem that requires attention. However, knowledge about the extent of the problem is sparse, there is little motivation to take action to prevent it, and there is a lack of leadership to address it. *See* community readiness.

Validity—the ability of an instrument to measure what it purports to measure.

Variable—a factor or characteristic of the intervention, participant, and/or the context that may influence or be related to the possibility of achieving intermediate and long-term outcomes.

NOTE: This glossary is based partially on work performed by Westover Consultants, Silver Spring, MD, and the Pacific Institute for Research and Evaluation, Bethesda, MD, under other contracts with the Center for Substance Abuse Prevention.

Appendix F: Resource Guide

This Resource Guide, as its name suggests, provides the reader with specific resources for developing programs to reduce youth tobacco use. The first part lists names and addresses of researchers and practitioners whose work was considered as evidence in evaluating the various intervention programs. Because detailed descriptions of their program planning and content is beyond the scope of this Guideline (and is not fully described in their published works), CSAP thought that those interested in implementing specific strategies may want to obtain more detailed information directly from these researchers and practitioners.

The second part of this appendix lists the various Government and Nongovernment Agencies that maintain repositories of information on youth tobacco use available to the public. While many of these agencies, such as the Bureau of Alcohol, Tobacco, and Firearms of the U.S. Department of Treasury, do not primarily focus on reducing tobacco use among youth, they often have useful data related to incidence, prevalence, consequences of use, licencing, enforcement, or other aspects that practitioners might find useful in developing their educational and program planning strategies.

Researchers and Practitioners

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4567 St. Johns Bluff Road South
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Practitioners

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Health Is Wealth
Asian Health Services
818 Webster Street
Oakland, CA 94607
Phone: (510) 986-6800

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Project ASSIST
National Institutes of Health
National Cancer Institute—DCPC
9000 Rockville Pike
Executive Plaza North, Room 241
Bethesda, MD 20892
Phone: (301) 496-0273
Fax: (301) 496-8675

Tammy Hopkins
Tobacco Education Program
Southwest Utah Mental Health/
Alcohol and Drug Center
354 East 600 South NO 202
St. George, UT 84770
Phone: (801) 628-0426
Fax: (801) 673-7471

Patricia Jensen
Stop Teenage Addiction to Tobacco
Center for Research in Disease
Prevention
Stanford University
960 West Headding, Suite 20
San Jose, CA 95126
Phone: (408) 247-7828
Fax: (408) 452-4636

Rick Kropp
Stop Tobacco Access for Minors Project
North Bay Health Resources Center
55 Maria Drive
Suite 837
Petaluma, CA 94954
Phone: (707) 762-4591

Captain Dana S. Mitchell
Dover Youth Access to Tobacco
Reduction Program
Dover Police Department
46 Locust Street
Dover, NH 03820
Phone: (603) 742-4646
Fax: (603) 749-3956

Janet Porter
Tobacco-Free Soccer League Initiative
Project
Health Education Council
1721 2nd Street, Suite 101
Sacramento, CA 95814
Phone: (916) 556-3344

Todd Tobias
Say Yes to Sports
San Diego Hall of Champions
1649 El Prado
San Diego, CA 92101
Phone: (619) 234-2544
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Ski Tobacco-Free Project
Kirkwood Ski Education Foundation
P.O. Box 161
Kirkwood, CA 95646
Phone: (209) 258-5733
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Pajaro Valley Prevention and
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Pajaro Valley Unified School District
18 West Lake Avenue, Suite P
Watsonville, CA 95076
Phone: (408) 728-6445
Fax: (408) 761-6011

Agencies and Organizations

Government Agencies

Agency for Health Care Policy and
Research
Publications Clearinghouse
1-800-358-9295
http://www.ahcpr.gov

Center for Substance Abuse Prevention
National Clearinghouse for Alcohol and
Drug Information
(301) 468-2600
1-800-Say-No-To
http://www.health.org

Centers for Disease Control and Prevention
National Center for Chronic Disease Prevention and Health Promotion
Office on Smoking and Health
(770) 488-5705 (publication requests)
1-800-CDC-1311 (media campaign line)
http://www.cdc.gov/tobacco

Environmental Protection Agency
Indoor Air Quality Information Clearinghouse
(513) 569-7562
http://www.epa.gov

Federal Trade Commission
Public Reference Branch
(202) 326-2222 (publications)
(202) 326-3150 (tobacco-related questions)

Food and Drug Administration
Office of Consumer Affairs
(301) 443-3170
http://www.fda.gov/bbs/tobacinfo/juristoc.html

Indian Health Service
Communications Staff
(301) 443-3593

National Cancer Institute
Office of Cancer Communications
1-800-4-CANCER
http://www.nci.nih.gov/occdocs/occ.htm

National Center for Health Statistics
Data Dissemination Branch
(301) 436-8500
http://www.cdc.gov/nchswww/nchshome.htm

National Health Information Center
1-800-336-4797
(301) 565-4167
http://nhic-nt.health.org

National Heart, Lung, and Blood Institute
Information Center
(301) 251-1222

National Institute for Occupational Safety and Health
Technical Information Branch
1-800-35-NIOSH
(513) 533-8326
http://www.cdc.gov/diseases/niosh.html

National Oral Health Information Clearinghouse
(301) 402-7364
nidr@aerie.com

National Technical Information Service
(703) 487-4650
1-800-553-NTIS

Occupational Safety and Health Administration
Department of Labor
(202) 219-8151
http://www.osh1a.gov

Office of Minority Health Resource Center
(800) 444-6472

United States Department of Agriculture
Tobacco and Peanut Division
(202) 720-4318

United States Department of Treasury
Bureau of Alcohol, Tobacco, and Firearms
Distilled Spirits and Tobacco Branch
(202) 927-8210

Nongovernment Organizations

Action on Smoking and Health
(202) 659-4310
http://ash.org/ash/

The Advocacy Institute
(202) 659-8475

American Association of Retired Persons
Health Advocacy Service
(202) 434-2300

American Cancer Society
1-800-ACS-2345
http://www.cancer.org/tobacco.html

American Council on Science and Health
(212) 362-7044

American Heart Association
National Center
1-800-AHA-USA1
http://www.amhrt.org

American Lung Association
(212) 315-8700
1-800-LUNG-USA
http://www.lungusa.org

American Medical Association
(312) 464-5000
http://www.ama-assn.org

Americans for Nonsmokers' Rights
(510) 841-3032
http://www.no-smoke.org

Association of State and Territorial Health Officials
(202) 546-5400

Coalition on Smoking OR Health
(202) 452-1184

Doctors Ought to Care
(713) 528-1487
http://www.bcm.tmc.edu/doc

Group Against Smokers' Pollution
(301) 459-4791

March of Dimes Birth Defects Foundation
(914) 428-7100

National Federation TARGET Program
(816) 464-5400

SmokeFree Educational Services, Inc.
(212) 912-0960

Stop Teenage Addiction to Tobacco
(413) 732-STAT

DHHS Publication No. (SMA) 97-3146
1997

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement (OERI)
Educational Resources Information Center (ERIC)

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